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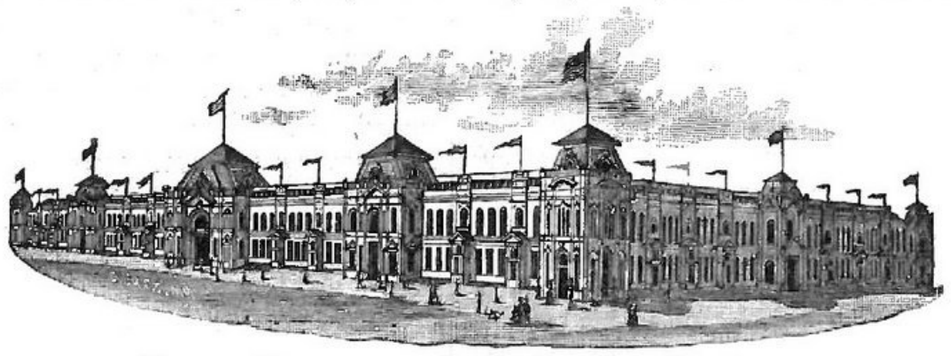
THE NEW ORLEAN'S WORLD'S EXPOSITION.

AS the readers of THE MILLING WORLD are no doubt aware the World's Industrial and Cotton Exposition, which opens at New Orleans, Dec. 1, and continues up to May 31 next. promises to be nearly, if not quite, as great and memorable an exhibition as was that of Philadelphia in 1876. As all of our readers cannot, perhaps, make a visit to it, and as, no doubt, those who are contemplating a visit thereto would like some particulars relative to the facilities to be afforded for perfect exhibition and display of the various articles that may be sent there, the following brief description of the various buildings may prove interesting.

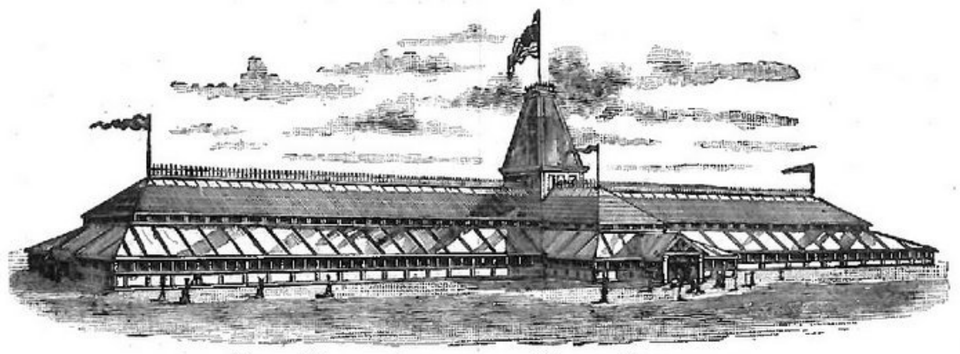
The main building, cut of which has accidentally failed to reach us, is the largest ever erected. It is 1,378 feet long by 905 feet wide, without courts, and has a continuous roof composed largely of glass so arranged as to afford an abundance of light without subjecting the interior to the direct rays of the sun. Within, the view is unobstructed. From one side or corner of the building to its opposite, the interior, showing all the phases of industrial activity, is seen. There are no partitions, and the lofty pillars, wide apart, supporting the roof structure. present no impediment to one's vision, but only serve to assist the eye in measuring the vast expanse. The interior is surrounded by wide and spacious galleries, twenty-three feet high, which are reached by twenty elevators having the most approved safety appliances, and by convenient stairways. The machinery department occupies a space of 1,378 feet long by 300 feet wide, within the main building, and has an extension added in iron 350 feet long and 150 feet wide for heavy machinery, described under the heading of factories and mills. From the galleries overlooking, more than two miles of shafting can be seen driving every known character of machinery. Music Hall, with a seating capacity, in commodious chairs, for 11,000 people, a platform capacity for 600 musicians and a mammoth organ built to order for the Exposition occupies the centre of the interior. The main building will contain general exhibits. It is situated about in the centre of the grounds.

The United States and State Exhibits building is 885 feet long by 565 feet wide. It is one of the largest exposition buildings ever erected. At the time of the adoption of the plans it was supposed that the main building, having the largest capacity of any building heretofore erected, in conjunction with the horticultural hall and such minor outside buildings as were necessary, would afford ample space and accommodation for all exhibits; but the interests in the World's Exposition had become so wide-spread and the inquires and applications for space became so numerous, that the necessity for additional accommodation became imperative, and the management determined upon the erection of this magnificent structure specially for the United States and State exhibits. The government exhibition will be complete—of itself, almost a mammoth exposition. Each department will have its distinctive exhibit. The department of state showing samples of cotton, wool and cosmos fibres, and of the fabries made from them from all parts of the world. This exhibit will be arranged in continental groups representing the geographical divisions of the world's commerce, etc. The postoffice department will exhibit all the improvements in mail facilities, and establish a branch office in the building for the accommodation of visitors and to show the practical workings of the postal system. The treasury department will exhibit coast survey, light housing, life-saving service, customs, internal revenue, engraving, printing, etc. The war department will show arms, ordnance, engineering, medical, surgical and hospital services, progress in same, etc. The navy department will show naval arms, ordnance, projectiles, torpedoes, dynamo electro machines for firing, models of war vessels—ancient and modern, etc. The interior department—everything pertaining to the inventions and improvements in American industries and to the history, customs and habits of the aboriginal races, etc. The United States fishery commission, the department of justice, bureau of agriculture, the bureau of education, and especially the Smithsonian institute, will be exhaustively represented. The government exhibit will vastly exceed that made at Philadelphia. In addition to the government exhibits, the collective state exhibits and the general educational display will be located in this building. This structure presents a very attractive appearance.

The Horticultural Hall is 600 feet in length and 194 feet wide through its centre. It is the largest conservatory in the world. It is substantially built as a durable structure, becoming, by arrangement with the city, a permanent feature of the park. It is located on high ground in the midst of olive-oak groves. Surmounting the center is a magnificent tower, 90 feet high, roofed with glass. Beneath this tower, in constant play, is a grand fountain. 20,000 plates of fruit, double the amount ever before displayed at any exposition, will be shown on tables, extending through the hall. Around the hall will be arranged an infinite variety of rare tropical and semi-tropical plants, flowers and shrubbery. There is a tropical hot-house, 250 feet long by 25 feet wide, in which the most delicate flowers from the far South will be nurtured and made to bloom in their most brilliant perfection. Tropical fruits in the various stages of growth will be exhibited. Fruits of every section and the productions of all seasons will, by arrangements for stated supplies and thorough processes of cold storage, be available for exhibit. The most eminent horticulturists of the United States are engaged in arranging and perfecting the display. Cash premiums to the amount of $32,000 are offered in this department, and contributions to its exhibits from Mexico, Central America, the West Indies, and the different States of the Union, will be unprecedently large and varied.

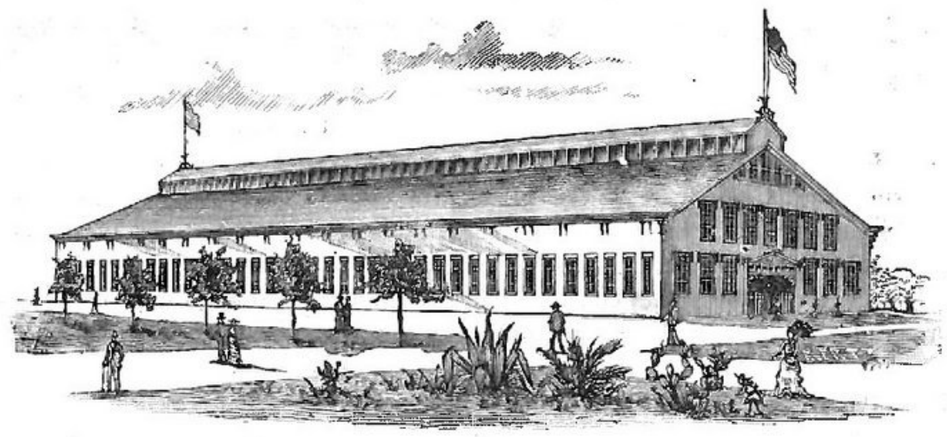


UNITED STATES AND STATE EXHIBITS BUILDING.



THE HORTICULTURAL HALL BUILDING.

THE ART GALLERY.



FACTORIES AND MILLS BUILDING.

The Art Gallery is 250 feet long by 100 feet wide. It is a structure built of iron, The building is an elegant and artistic structure, so arranged for mounting, accessibility and light as to present the best effects, and with ample accommodation for as large a collection as was ever exhibited on this hemisphere. It will be fireproof—even the partitions being of iron.

The Factories and Mills Building is constructed of iron, and is 350 feet long by 120 feet wide. In it will be exhibited cotton in all stages of manipulation from the boll to the bale. The newly invented "Cotton Pickers, Openers and Lappers," as well as the various and complex machinery for ginning, cleaning, baling and compressing, will be in constant operation. The supply of field cotton for this purpose will be abundant. In addition to cotton machinery this extension of Machinery Hall will contain the various kinds of machinery used in the rolling of cane and manufacture of sugar, and in the harvesting and milling of rice. Various kinds of factory and mill machinery for wood working, brick and tile making, etc., will be located in this structure. Adjacent to this building there will be a line of saw mills, extending toward the river showing forty saw mills in motion.

The grounds embrace the space of 247 acres, bounded on the north side by St. Charles Avenue, on the south by the Mississippi river. The buildings front east towards the main portion of the city. An electric railway encircles the grounds.

Fortunately for the World's Exposition its resources, though not lavish, are abundant for all the purposes of providing ample space, securing necessary attractions and promoting complete success. The appropriation by the general government of $1,300,000, the contribution by the citizens of New Orleans of $500,000, and the appropriation by the City of New Orleans and the State of Louisiana, each of $100,000, affords an ample fund for the purposes mentioned. The management of the Exposition has been benefitted by the experience of former Expositions. It has not considered it politic or necessary to give to temporary structures the same degree of elaboration and detail that should be given to those that are intended for permanence. The Main Building of the World's Exposition, while affording fifty per cent. more space than the main building of the Philadelphia Centennial, being fully as pleasing in architectural design and appearance, has not cost one-fourth as much to erect. The same can be said of the other structures. In all the material points of appearance, convenience and adaptation for use, the structures of the World's Exposition will compare with those of any other exposition ever held, and in many respects will be decidedly superior.

Many circumstances combine to furnish the World's Exposition with numerous attractions, such as will exert an effectual influence upon the people of all sections of our own country and which will be felt in foreign countries, and especially in those

south of the United States. For the people of our own country, the location of the Exposition at the City of New Orleans, the gateway to the gulf and the portal to the one great system of interior water navigation on the earth—a system radiating from her wharves, reaching the richest granaries of the world, was exceedingly appropriate. New Orleans is looming into merited prominence from many points of view. Possessing deep water to the sea, has rapidly developed her commercial importance—foreign and domestic. The construction and opening of additional grand railway trunk lines has contributed to and confirmed this development. Aside from the material claims to general interest, there is a quaintness, a charm and life peculiar to the old time Latin city, which almost instinctively attracts the stranger and furnishes at once a valued and gratifying experience.

A matter of the utmost importance to the visitor is the question of accommodation; with this, as to character, comfort or safety, in doubt, large numbers would be deterred from attendance. The Board of Management early realized the importance of the subject and took prompt and effective steps in the matter. A department of accommodation and information has been organized. The city is being thoroughly canvassed, divided into districts and sub-districts, each having connection with the central office by telephone, telegraph or messenger service. All the accommodation of the city is being listed and classified, its character and rate of charges determined, so that no imposition or extortion can prevail, and the promptest information and assistance will be at all times available to the visitor. No charge for this service is made either against citizen or visitor. In a city of 250,000 inhabitants, in a climate like that of the Crescent City, with houses of more than ample capacity, it will not be impossible to secure comfortable and acceptable accommodation for fifty thousand extra people. Besides the accomodation assured within the city precincts, the Mississippi Sound coast for a distance of more than forty miles is lined with a succession of fine hotels and comfortable boarding houses for summer and winter resort, all within an hour and a half to two hours ride of the city. Accommodation for thousands of people can be obtained. Bordering the Gulf shore, in the midst of the pine, live oak, the orange and the magnolia, with numerous mineral springs, superb facilities for fishing, sailing and hunting, with a mild yet bracing salt air of the sea. with constant communication with the city by luxuriously furnished and rapid trains, tarrying at these resorts will be found wonderfully attractive and compensating. In addition to the accommodations now afforded numerous Hotel Companies are preparing to establish capacious buildings near the grounds.

THE FUTURE OF THE GRAIN TRADE AND MILLING INDUSTRY OF AUSTRIA-HUNGARY.

At the recent meeting of the Austrian millers, Mr. G. Pappenheim, the well known editor of the *Mueller Zeitung*, gave his views on the subject as follows:

We are passing through a period of declining prices of cereals, especially of wheat, and this I believe would have happened even if the present harvest had been less abundant. The fact that the crops have been in such a splendid condition everywhere has simply hastened this price-regulating process. The price of merchandize, after making due allowance for the cost of production, depends upon the supply and demand, and so wheat has commanded for years on the Vienna market, a price between 11 and 13 fl, according to the harvest, and the average prices were always found between these figures.

The rapid increase of the wheat production of America, India and Australia have, however, increased the supply to such an extent that the average prices can no longer be maintained. This increased supply is by no means periodical and dependant upon extra rich harvests, but is a constant factor now and entirely independent of the harvests. In America where civilization is making such immense advances in the Western States, the grain fields multiply at an astonishing rate, and we find to-day that the production of the United States amounts to 550,000,000 bushels of wheat, which, allowing 300,000,000 bushels for home consumption, leaves 250,000,000 bushels available for export, not to mention the stocks on hand. This is a quantity sufficient to supply the deficiency of all those European countries which consume more wheat than they are able to produce. To this we must add the constantly increasing surplus of countries which before had none, for instance India, Australia, South America; and the surplus which has become available by improved transportation facilities, as for instance, in Russia.

Such an increased production is by no means counterbalanced by an increased consumption; on the contrary, the unfavorable industrial conditions of Europe have diminished the consumption of even that most primitive food article, bread. But under the most favorable conditions we find the natural annual increase of population, from 1 to 1½ per cent., unable to consume the increase of production in wheat, and a constant overproduction necessitates a constant reduction of prices. Similar conditions have been experienced with regard to cotton and alcohol in the past, and the sugar industry of Europe is just now passing through a similar crisis. A remedy can be found quicker for the industrial products, than for the natural products. A reduction in the working time or a closing of certain establishments always prevents overproduction in the articles of manufacture, but with agricultural products this cannot be done. Farmers will cultivate their fields and a transition from wheat to something else cannot be effected in the turn of a hand, but presupposes a long time and many failures. Even if American farmers claim that wheat production does no longer pay, it does not in any way alter the condition. The prime question, how large is the cost of production, has never been decided satisfactory, and, moreover, the price of any commodity is principally regulated by supply and demand, not by cost of production.

Governments have tried to help the grain producers by introducing grain tariffs, but aside from the moral question of taxing the poorest people for the benefit of the producer, such tariffs can increase the prices only in countries which consume more than they produce. On the other hand, countries which produce more than they consume will never be able to have higher grain prices on account of tariffs.

No matter from which side we look at the existing conditions, we find a constant overproduction necessitating a decrease of prices, and the first signs of the needed re-adjustment of the average prices were seen two years ago. Of course such process cannot be expected to take its course gradually and smoothly; it rather works convulsively, because producers, owners and speculators do all in their power to stem the tide. We are at present in the very midst of a crisis, without which a permanent price regulation is impossible. The question whether we have passed the climax cannot be answered now, but all indications tend to show that the worst has yet to come.

Panics have generally had a tendency to run to the extremes on low prices, as they have largely been the consequence of extremes on high prices. It does not seem that the depressed grain prices, up to the present time, can be called excessive, as we have had lower prices before, but it is with all possible that a momentary check is reached. If the harvests were less universally abundant, then this adjusting process would have lasted a few years longer, but it is altogether probable now, that we will again return to normal conditions, with reduced wheat prices, in a short time.

Milling is so intimately connected with the grain trade, that what affects one, will affect the other; but there are additional factors which influence the milling industry. Austrian milling suffers considerably, so far as export is concerned, by the constant improvements in the milling systems of other countries, which reduces the demand for the foreign products in their markets. But owing to the ready home markets for the inferior grades of flour, our mills can produce the highest grades at a lower price than can be done in countries where the dark flours are not so much in demand, and therefore our finer grades will always find a ready export market.

When we now ask what is the future of the grain trade and milling interests of Austria-Hungary, we arrive at the conclusion that our grain producers must submit to the inevitable, and bring their prices down to such a level as will permit an export of the surplus. A rational cultivation of the soil will be found the most efficient aid to the farmers, and save them from financial ruin. The low prices will prevent the too rapid increase of the area under cultivation in America; other countries will find the transportation expenses too large to compete on the markets of Europe, and will substitute stock and dairy farming for wheat cultivation, and all these causes will tend to restore a healthy equilibrium between production and consumption. Grain trade will again pursue its even tenor, and the Hungarian grain and flour will continue to add its share to the general supply of European markets, especially if reduced railway rates can be obtained. If our grain producers and owners, on the other hand, offer too much resistance to the inevitable low prices, the importation of American, Indian and Russian wheat will increase at a rate which will soon demonstrate to them their inability to offer any obstacle to the new order of things.

Our milling industry suffers at present under the inconveniently low grain prices which diminish the flour export, as well as under the uncertainty and convulsions of the panic due to the present conditions of trade. The low prices will finally induce the inland merchants to purchase, the demand will increase as the stock in hand by the bakers becomes exhausted, and slowly the scale of prices between grain and flour will be re-adjusted. The present situation is critical for the grain trade as well as for the milling industry, and we don't know whether we have surmounted the greatest difficulties. But for all that there is no cause for despair, and the Austrian-Hungarian milling industry will survive the present crisis and continue to live and assert the superiority of its products on the world's markets.

NUTRITION AND ITS COST.

W. O. Atwater, professor of chemistry at Wesleyan University, Middletown, Conn., read a paper on "Percentages and Costs of Nutrients for Foods," before the Economic Science Section of the American Association, of which the following is an abstract:

According to the Professor's theory fish, as found in the markets, generally contains more refuse, bone, skins, etc., than meats. With the large proportions of both refuse and water, the proportions of nutrients, though variable, are usually much less than in meat. Thus a sample of flounder contains 67 per cent of refuse, 28 of water and only 5 per cent of nutritive substance, while the salmon averaged 23, the salt cod 22 and the salt mackerel 36 per cent of nutrients. The nutrients in meats ranged from 30 per cent in beef to 46 in mutton and 87½ in very fat pork (bacon). The canned fish compare very favorably with the meats. It is worth noting that the nutrients in fresh cod fish, oysters, and in milk were nearly the same in amount, about 12½ per cent, though differing in kind and proportions. Vegetable foods have generally less water and more nutrients than animal foods. Ordinary flour, meal, etc., contain from 85 to 90 per cent nutritive material. But the nutritive value is not proportional to the quantity of nutrients, because the vegetable foods consist mostly of carbohydrates, starch, sugar, cellulose, etc., of inferior nutritive effect, and because their protein is less degestible than that of animal foods. Potatoes contain a large amount of water and extremely little protein or fats.

By means of a carefully prepared tabulated statement the Professor showed that the nutrients of vegetable foods are, in general, much less costly than animal foods. The animal foods have, however, the advantage of containing a larger proportion of protein and fats, and the protein, at least, in more digestible forms.

Among the animal foods, those which rank as delicacies are the costliest. The protein in the oyster costs $3, and in salmon it rises to nearly $6 per pound. In beef, mutton and pork it varies from $1.08 to forty-eight cents; in shad, bluefish, haddock and halibut the range is about the same, while in the cod and mackerel, fresh and salted, it ranges from sixty-seven to as low as thirty-three cents per pound. Salt cod and salt mackerel are nearly always, fresh cod and mackerel often, and even the choice fish, as bluefish and shad, when abundant, cheaper sources of protein than any but the inferior kinds of meat.

THE SOCIAL EFFECTS OF MACHINERY.

Edward T. Peters, of Washington, D. C., read a paper before the Economic Science Department of the Scientific Congress at Philadelphia, entitled, "Some Economic and Social Effects of Machinery," of which the following is an abstact:

The prominence attained in recent times by what is briefly designated as the labor question is mainly due to the revolution that within the past century has been wrought in the methods of production. Smaller and smaller grows the amount of industry that can be carried on in little workshops, or in the household with small amounts of capital, while the portion that must be carried on in large establishments is still rapidly enlarging. The aggregate increase of wealth which this change has brought about is incalculable, and this has seemingly rendered it possible that each individual should have a much larger share of the necessaries and comforts of life than could have been had when labor was so much less productive, as it was under the old industrial system; but, while the average condition of society has been greatly improved, the condition of the working classes has not been improved in anything like the same proportion. In special cases there have been entire classes of workmen who probably have not received a sufficient share in the benefits arising from machinery to compensate them during their life for the injuries they received in being crowded out of a skilled occupation.

The great fact in connection with machinery is the effect it has had and is still having in causing the concentration of capital in large establishments, and rendering it impossible, save within narrow limits, to

carry on industrial operations on a small scale. The fact that many men, now capitalists, have worked their way from the ranks is cited as an evidence that it is still easy to rise out of the class of wage-workers into the class of employers; but the class of employers is now relatively so small that for any considerable percentage of wage-laborers to rise into it is a mathematical impossibility. The development of the modern credit system is mainly due to machinery. An invention is no less active now than formerly, and, as the use of existing machinery is steadily extending over new ground, it is important that statesmen should consider how the evils incident to the change in industrial processes may, as far as possible, be obviated while the benefits are increased.

The increase of machinery is not purely spontaneous, but is in great part the result of patent laws expressly intended to secure it; and this being the cause it is incumbent upon Government to deal with the problem as a whole, instead of considering solely how the vast benefits of machinery may be obtained and giving no thought as to how its evils may be averted. The present system is efficient, but it should be supplemented by legislation so as to protect the particular classes who temporarily become the victims of machine competition, while the whole question of reserving to labor a more nearly proportional share in the enormous increase of wealth which machinery brings with it, demands the most serious attention of statesmen and of economic students.

ELECTRIC LIGHTING.

The Department of State has received from Consul General Weaver a long report by Professor Carl Plaff on the use of electricity in Vienna. He says the first public experiments with electric lighting and transmission of power in Vienna took place during the World's Exhibition, in 1873. Numerous buildings, including mills, depots, newspaper establishments and business houses have been lighted by electricity. He says further: "The first electric lighting in railway cars in Vienna was applied on the Emperor Ferdinand's Northern Railway Company, for which Egger, in 1878-'79, constructed a car which was provided with a complete steam motor and dynamo machine, some coiled conducting material and two lamps. This car is designed to be used at night at any place on the line where accidents have occurred, and on other necessary occasions. This car was first employed by Baron Eichler, the Inspector General, and it has already proved of great service both on the line and elsewhere. Besides other purposes, it was used in 1879 to light under water during the laying of the foundation of the floating gate on the Danube canal, where it gave great satisfaction.

"The Southern Railroad, in 1883, made a more extensive experiment by lighting a passenger car with electric light, which works its dynamo machine from one of the revolving axles, and keeps a constant light by the interposition of several De Calo accumulators. In 1880 Sedloczek, at present in Vienna, constructed an electric locomotive headlight, which is well-known from his exhibitions at Paris, at Munich, and at Vienna, and with which extensive and satisfactory trials were made. Up to the present time no electric light has been introduced in Vienna for streets and public places, nor for public buildings. However, it is now seriously planned to provide the Parliament House, Opera House and new Burg Theatre with electric light, although the lighting of the streets by electricity is not yet contemplated. The objects, however, are the largest of their kind. Each of them will require a working power of several hundred horses, the placing and working of which in these magnificent buildings will be attended with many difficulties. In regard to the accumulators, which it is generally believed might do the work, there is yet too much uncertainty to justify their construction, particularly for such large establishments, and the possibility of erecting central stations, where the electric current might be generated and transmitted to several distant objects as desired, is even more problematical. The most appropriate thing, no doubt, would be to construct one or more establishments for the generation of the current at a certain distance, but just in this regard all eyes are now directed to America. If there, where so many difficult problems have been brilliantly solved, the transmission of the electric current at long distances can be practically accomplished, we shall gratefully accept also that innovation.

"In the foregoing resume of the application of electricity for lighting purposes, attention has been confined exclusively to Vienna, since to give a detailed account of all the experiments made in the Empire would require more time and space than would be profitable. The chief installations, however, in the Empire, outside of Vienna, will be found in the theatres of Prague, Brunn and Buda-Pesth. Besides this we would find a considerable number of manufactories and places of public resort lighted by electricity. But it is very remarkable that nowhere in the Empire are the streets definitively lighted by electricity."

CHEAP WHEAT AND CORN.

The world is raising more wheat than it needs, some say. That is folly. Some people are starving, multitudes are poorly fed. There can be no over-production of food, until every industrious worker in civilized countries can have three good meals every day. We have a vast quantity of corn, it is true. But so long as thousands in our cities, and millions in Europe, have to live without meat, there can be no overproduction of food for cattle and hogs.

Prices of meats are too high, both here and in Europe. An extraordinary advance was caused by the partial failure of crops in 1881; the vast decrease which followed in the number of cattle, both here and in Europe, was a natural consequence. From that meat-famine Europe has not had time to fully recover. This country might by this time have much cheaper meat of all kinds but for the operations of persons who control the forwarding and packing of meats and cattle, but no combination will be able to resist the power of a corn crop of 1,800,000,000 bushels. According to the Census, 3d volume, an investigation disclosed the fact that, out of 1,617 million bushels of corn raised in 1882, the quantities used for different purposes were as follows: For export, seed, spirits and surplus, 167 million bushels; for human food, 150 million; for food of work animals, 520 million; for food of meat-producing animals, 780 million bushels. Now, the quantities required for the purposes included in the three classes first named will not greatly vary in times of abundance. The surplus can be and will be applied to the production of more meat, and 200 million bushels more available for that purpose means a vast increase in the meat supply at no distant date.

The next consequence will be a marked increase in the consumption of breadstuffs. For when the smallest supply of meat is very costly, so that great numbers of working people are compelled to abstain in part from its use, their consumption of breadstuffs does not correspondingly increase, as might be supposed. But when meats are cheaper, so that necessity or habit does not force so large an expenditure for animal food, then an increase in consumption of breadstuffs also usually appears.

The prostration of manufacturing industries, here and abroad, is the chief cause of inability to consume the supplies of breadstuffs. Great numbers are out of work; far greater numbers are living upon such scanty wages that their consumption is curtailed. The marvelous progress of machinery has made things cheaper all over the world. But human society has not yet adjusted itself to the tremendous change. The distribution is defective, largely in consequence of excessive tariff and illiberal legislation, which tend to prevent a free exchange of products. For a time, there must be people out of work, because their products find no market, and these, in turn, cannot consume as they would of the products of others. But a disorganization which comes from superabundance in any direction is one which society soon corrects. —*N. Y. Commercial Bulletin.*

SHE DIDN'T TAKE IT TO HEART.

"Molly, I wish you would be a better little girl," said an Austin father to his little daughter. "You have no idea how sorry I am that mamma has to scold you all the time."

"Don't worry about it, pa," was the reply of the little angel: "I am not one of those sensitive children. Half the time I don't hear what she says."—*Ex.*

HOW DID HE KNOW WHAT WAS LOST?

Tiff Johnson went out fishing again one day last week. He had a nice lunch fixed up, but upon arriving at the creek he discovered that he lost it, so he retraced his steps. Meeting a large satisfied-looking negro, who was picking his teeth, Tiff asked:

"Did you pick up anything in the road?"

"No, sah, I didn't pick up nuffin—couldn't a dog had found it and eat it up."—*Texas Siftings.*

SPECIAL ADVERTISEMENTS.

Advertisements of ***Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange,*** *etc., etc., cost 1½ cents per word for one insertion, or 4 cents per word for four insertions. No order taken for less than 50 cents for one insertion, or $1 for four insertions.* ***Cash must accompany the order.*** *When replies are ordered sent care of this office, 10 cents must be added to pay postage.*

SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1½ cents for each additional word. ***Cash with order.*** *Three consecutive insertions will be given for the price of two.*

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By a miller who understands the "Roller System." Good references. Address, LOCK BOX 84, Niagara Falls, N. Y. 1820

The MILLING WORLD
AND CHRONICLE OF THE GRAIN AND FLOUR TRADE.

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SUBSCRIPTION.

In the United States and Canada, postage prepaid, $1.50 Per Year, in advance; can be remitted by Postal order, registered letter, or New York Exchange. If currency is enclosed in unregistered letter, it must be at *sender's risk.*

To all Foreign Countries embraced in the General Postal Union, $2.25 Per Year, in advance.

Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly will please notify at once.

ADVERTISING.

Card of Rates sent promptly on application Orders for new advertisements should reach this office on Tuesday morning, to insure insertion in the week's issue. Changes for current advertisements should be sent so as to reach this office Saturdays.

EDITOR'S ANNOUNCEMENT.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or he grain and flour trade.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with any manufacturing or mill furnishing business. Its editorial opinions cannot and will not be influenced by a bestowal or refusal of patronage. It has nothing for sale, but its space to advertisers and itself to subscribers.

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PENNSYLVANIA.	Landis Levan, Sec'y..	Lancaster.
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BUSINESS AND POLITICS.

IT would be idle to deny that the business interests, the manufacturing industries, of the country are now in a decidedly depressed condition, yet it is difficult for the average man to say why such is the case. For nearly a year has this depression been unpleasantly present, and each month has but, seemingly, increased the stagnation. Our cotton factories, furnaces, rolling mills, are, in increasingly large numbers, shutting down, and in all our manufacturing cities and towns thousands upon thousands of operatives walk the streets unable to find employment. Why is this?

We are assured by orators of one political complexion that we must not look for activity in manufacturing circles until the people, at the polls in November next, shall express their desire for the retention of our protective tariff. Their opponents as loudly and solemnly assert that it is this same protective tariff which has caused the stag nation in business, When doctors disagree who shall decide? It is said that the pos sibility of reduction in tariff charges has rendered business men uncertain of the future, and made necessary a curtailment of productive operations, that they may be in position to take advantage of any altered conditions under which future business may have to be transacted. On the other hand we are told that our protective tariff, while undoubtedly stimulating productive industries in this country in the past, has operated to close against us foreign markets, and as our home markets are overstocked a cessation of operations is necessary until natural consumption has reduced stocks. We are told on the one hand that the present depressed condition of business is the result of over-production, while others say it is simply under-consumption. This would appear to be simply a distinction without a difference.

If business depression was confined to this country alone, then it might not be a difficult matter to very plausibly trace the cause to political excitement and uncertainty, but such is not the case. Foreign nations suffer as we do. There is, to be sure, an element of uncertainty as to the future pervading business circles, which is the very natural result of a Presidential campaign. It is undoubtedly true that a change in the party dominant would, to some degree, affect business conditions, but as the current campaign is being fought more on personal than political grounds, it would appear that neither party is prepared either to advocate or inaugurate changes that might at once affect the business interests of the country. Aside from the fact that a Presidential campaign is, in its closing weeks, almost synonymous with a season of holiday and recreation, we are justified in eliminating it as an element of the present depression. As a rule, purchases are curtailed during the last month of a Presidential campaign, because it takes up the time and attention of the intelligent voters to listen to political speeches and join in torchlight processions, pole raisings and other demonstrations.

While we cannot attribute the prevailing stagnation in business to the political contest now in progress we may, in some measure, look upon this contest as a beneficial agent, one which is quietly bringing about a better relation between producer and consumer. Consumption is going on much more rapidly then production, and shrewd men are cognizant of this, and are but awaiting the proper time to take advantage of it. Those who prophecy disaster in the near future are daily becoming fewer in number. Have bottom values been reached? Who can say? Certainly in many lines, a level much below profit has been touched, and it is improbable that further depreciation can occur. The turning point should be reached soon after the November elections, and we think will be, because freed from other influences the disposition and ability of the people to make purchases will be fairly manifested, and will afford a basis for action upon the part of the manufacturing and commercial classes. The recovery will not perhaps be rapid but it will, we believe, be sure and no step forward will be recalled.

CURTAILING PRODUCTION.

How very natural it is, when the market has become overstocked with any article of merchandise, to cast about for some means of curtailing production and yet how seldom successful are the efforts put forth to that end, and, paradoxical as it may seem, how invariably successful are all such efforts. As our manufacturing interest increase, and expand, as their locations become more numerous and extended, unanimity of action, as to increase or decrease of output, becomes more difficult of attainment, yet involuntarily this increase or decrease is brought about simply as the result of agitation for it, and also from a spirit of contrariness possessed, in greater or lesser measure, by individual members of the interest whose goods may be in excess, or short, of ordinary requirements. For some months past the lumbermen of the Northwest have advocated a cessation of lumber sawing, urging that manufactured stocks were largely in excess of requirements, and that continued activity in the mills would but result in forcing values so far below a profitable level as to entirely demoralize the trade. The result of the effort at combined action is well known. It was a failure, and yet, before another six months go by, we think it will be apparent that a material curtailment of production has taken place. Attempts have been made in other productive industries to limit the output but combinations to this end have not met with gratifying success, yet production has been limited. And why?

Every unsuccessful effort at such combination impresses individual members of the interested trade with the absolute necessity for greater watchfulness of the markets open to him; he, unconsciously perhaps, nevertheless surely, produces a little less than hitherto. He does this simply because, in his opinion, others will not follow the same policy, and he means to get, if possible, in better condition to stand a dragging market than his competitors. So many become imbued, or impressed, with this idea that almost insensibly, yet certainly largely, output is curtailed, and stocks become more or less depleted, causing the markets to again approach conditions that necessitate a resumption of activity to meet demands.

Suppose it were possible by combinations to limit output, would it be beneficial to the country? We think not, because it would then be possible to advance values to exorbitant figures. We would all be at the mercy of cliques, which, running a little short of pocket money, could, and would, combine to force values of any, or every commodity, up to any figure they pleased. Competition would be impossible, and all productive industries would finally be controlled by vast corporations which would dictate values upon every article whether of necessity or luxury.

FUNNY things do happen sometimes when the regulation of trade and commerce is entrusted entirely to the hands of the government. For years the Austrian bakers have complained that small mills were in the habit of running a bakery in connection with the mill, and petitions have circulated freely which were designed to demonstrate to the government the disastrous effects of such competition to the baking fraternity. Now new laws have been enacted and the millers are taxed when they bake bread, but the bakers are also taxed when they sell flour. The next series of petitions on the part of the bakers will beyond doubt try to prove that, while they admit the justice of making "that other fellow" pay the taxes of his trade, they themselves should form an exception. How the Austrian government in its endeavors to give universal satisfaction, will find its way out of the dilemma, remains to be seen.

WE had the pleasure of a call, last Friday, from Mr. Gregg, of H. & W. Gregg, flour and produce merchants of Belfast, Ireland. Mr. Gregg visits this country upon business, but will try, as well, to squeeze a little pleasure and recreation from the trip. He will visit a large number of mills and hopes to much enlarge his firm's already extensive business with American millers. Speaking of this, Mr. Gregg, in the course of conversation stated that through THE MILLING WORLD his firm had been led to a business connection with California millers which had already aggregated over half a million of dollars in transactions. We would be glad to chronicle a like result for every state in the Union.

WE can learn much by observation. For instance, one who has given the subject deep cogitation, and has spent many weary hours noting the peculiarities of wheat speculators says that, as a rule, when a speculator gets wheat down to 75 cents or any excessively low price, and it starts up, he always has an idea that it is going back to 75 cents again, and he sells at 77 cents perhaps and waits for the decline, which never comes. But he never becomes discouraged. The idea that wheat is go ng back to 75 cents is firmly fixed in his head, and he holds on to his deal until it breaks him. That firm conviction has impoverished nearly every speculator that has ever failed.

RECENT tests made in Germany with regard to the baking qualities of flour produced from their spring and winter wheat, gave a difference of about 10 per cent. in favor of the former. This difference increased for the poorer grades, so that while the difference in the quantity of bread baked from a barrel of No. 1 spring and one of No. 1 winter wheat was 15 pounds (302 pounds for the former and 287 pounds for the latter); it rose to 22 pounds in No. 2 and to 24 pounds in a No. 3 grade flour, giving 277 and 299 pounds for No. 2 and 275 and 299 pounds for No. 3.

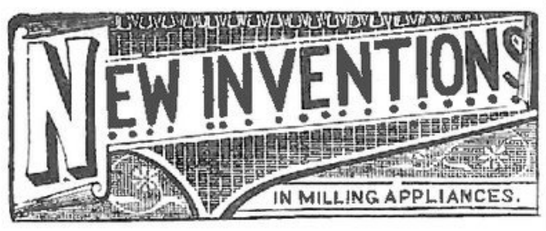
THE advantage of shipment of grain in bulk by rail, so common in America is duly appreciated in European countries, but under the fostering care of the respective paternal governments private enterprise is at a disadvantage, and it yet needs an immense amount of red tape in the form of petitions, commissions, etc., etc., before this much needed improvement in grain shipments can be introduced even in the leading grain producing districts.

A BRIEF note from the Geo. T. Smith Middlings Purifier Co., Limited, of Canada, advises us that they have been awarded a gold medal for their display of mill machinery at the Canadian Expositien at Montreal. This, while unquestionably gratifying to the company, is strong evidence that our Canadian brethren appreciate and acknowledge a good thing when they see it.

THE commissioners of the twelfth international grain fair at Vienna passed the following resolution: That the Austrian Government be petitioned to use their diplomatic influence with governments not using the metric system of weights and measures, to inaugurate as soon as possible its universal adoption, especially for the grain trade.

THE Societe d'Acclimatation of Paris has distributed sample packages of a variety of rice which is said to grow without any irrigation on a sandy or loamy soil. It has originally been found in the Mandschurei, and the results are looked for with curiosity.

THE recent exhibition, at Vienna, of motors for the small industries, has been pronounced a failure in every respect, exhibiting nothing new outside of a few technically valuless toys.



ROLLER-MILL.

Letters Patent No. 305,320, dated September 16, 1884, to Daniel W. Marmon and Jesse Warrington, of Indianapolis, Ind., assignors to the Nordyke & Marmon Company, of same place. This invention principally consists in certain improved mechanism for stopping and starting the feed-rolls of that class of machinery for the reduction of grain known as "roller-mills." It further consists in devices connecting said mechanism to that by which the grinding-rolls are thrown into or out of grinding relation, so that both operations may be effected simultaneously, and also in certain details of construction and arrangements of parts incident to such operations. There is shown and described in this application a complete double mill for the purpose of illustrating fully the manner in which the invention is generally used. There is also shown and described the construction when the mill is converted from a double to two single mills. There are further described at length many of the parts of the mill that relate only remotely to the present invention, in order that the operation of the mill may be clearly understood without referring to other sources of information. Referring to the accompanying drawings, Figure 1 is a perspective view of a machine embodying the invention; Fig. 2, a top or plan view of the same; Fig. 3, a front elevation thereof; Fig. 4, an end elevation, as seen from the dotted line *z z* at the left of Figs. 2 and 3; Fig. 5, a horizontal sectional view, looking downwardly from the dotted line *y y* in Figs. 3 and 4; Fig. 6, a portion of Fig. 5 on an enlarged scale; Fig. 7, a top plan of the mechanism embodying this present invention and adjacent parts, on an enlarged scale, as seen when looking downwardly from the dotted line *x x* in Fig. 8; Fig. 8, an elevation of most of said mechanism and the supporting framework, as seen from the dotted line *w w* in Figs. 2, 7, and 10; Fig. 9, an elevation of the parts shown in Figs. 7 and 8, as seen from the dotted line *v v* in Figs. 2, 7, and 10; Fig. 10, a sectional view, looking toward the right from the dotted line *u u* in Fig. 9; Fig. 11, a sectional view, looking upwardly from the dotted line *t t* in Fig. 9; Fig. 12, a view looking toward the left from the dotted line *s s* in Fig. 9; Fig. 13, a vertical sectional view, looking upwardly from the dotted line *r r* in Fig. 7; Fig. 14, a view similar to Fig. 6, but illustrating an alternate construction; and Fig. 15, a top plan of the construction shown in Fig. 14. In said drawings, the portions marked A represent the castings which form the supporting frame-work of the mill; B, the hopper and other covering portions; C′ C² C³ C⁴, the shafts of the grinding-rolls; D, swinging arms, in which one of each pair of rolls is mounted; E, adjustable boxes, preferably mounted on said arms; F, tempering-rods for adjusting the maximum force of the grinding-pressure; G, distance or adjusting rods for regulating the position of the arms; H, short vertical shafts having an eccentric formation at one point, to which point said rods G are attached; I′ I² I³ I⁴, levers attached to said several vertical shafts, respectively, whereby the same are operated; J′ J² J³, connecting bars or rods, by means of which a simultaneous motion is imparted to said several shafts; K, a sliding-collar, which, with its pin *k*, forms a clutch for the wheel 9; L, a sliding-rod by which said collar is operated; M, a cam which operates said rod; N, the feed-gates; O′ O², the feed-rolls; P, the counter-shaft; Q, a yoke or frame which sustains said counter-shaft, and R a screw device for adjusting the position of said yoke. The frame-work A and hopper B are of a well-known form, and serve the ordinary purposes of such parts. The roll-shafts C′ C² C³ C⁴ are the ordinary grinding-roll shafts, and bear the usual belt-pulleys, 1 2 3 4. The arms D are swinging arms located at each end of the machine, to which the boxes for the movable rolls are attached, and by which said rolls are rendered adjustable toward or from their fellows, and are mounted upon pins *d*. The journal-boxes E are seated on the arms D, and should be vertically adjustable thereon, in order that the roll-shafts may be brought into a horizontal plane should they, by wear or otherwise, be caused to vary therefrom. The tempering-rods F hold the lower ends of the arms E inwardly against the fixed stops formed by the pivots *d* with such force as is needed for a grinding-pressure. Said force may be varied, as desired, by turning the hand-nuts *f′* on said rods, and thus increasing or relaxing the compression of the spring *f²*. The pin *d*, being above the rod F, acts as a fulcrum, and the spring *f²* thus serves to pull the upper end of the arms D outwardly, and thus hold the grinding-rolls apart. The adjusting-rods G are for the purpose of moving the upper ends of the arms D back and forth, and thus bringing the individual rolls of the pair nearer to or farther from each other. Each is pivoted at the inner end to the eccentrically-formed portion of the corresponding vertical shaft H, and is preferably provided at its outer end with a hand-nut *g′*, and a hand-nut *g²*. The arms D are adjusted inward or back by turning the hand-nut on the rod G, and the rolls supported by said arms are thus positioned nearer to or farther from their fellows. The vertical shafts H are set in bearings in the upper portion of the frame-work A. Each has an eccentric portion, *h*, to which a rod, G, is attached, so that when said shafts are turned said rods will be drawn back and forth. The levers I′ I² I³ I⁴ are mounted on the vertical shafts H, and serve to operate said shafts. One or more of these levers should be provided with a handle, I, for the convenience of the operator. The connecting-bars J′ J² J³ connect the above-mentioned levers together and cause them and the shafts H to move simultaneously, and thus part both movable grinding-rolls from their fellows at once. The bar J² is provided with downward-projecting lugs *j*, which engage with the latch *m³*, and thus operate the cam M, as will be presently described. To permit these lugs to pass easily over the latch *m³*, should the latter be somewhat out of position, they are beveled on the outer side, as shown most plainly in Fig. 8. When it is desired to run the machine as two single mills, the bar J³ is removed and that portion of this mechanism upon either side of the mill can then be operated independently of that upon the other. When the mill is intended originally to be used as two single mills, the levers and bars are preferably constructed and arranged as shown in Fig. 15. The above described mechanism, consisting of the rods G, vertical shafts H, levers I′ I² I³ I⁴, and connecting-bars J′ J² J³, is essentially the same as that shown and described in the Letters Patent No. 266,490, granted October 24, 1882, upon our application, to the Nordyke & Marmon Company, as assignee, and we regard the changed forms shown herein simply as improvements upon or alternate constructions of the said mechanism and fully covered by said Letters Patent. The sliding collar K is mounted on the feed-roll shaft that the pulleys 9 and 10 are on, and revolves therewith. It is provided with a pin, *k*, which passes through the hub of the wheel 10, and may enter a hole formed to receive it in the hub of the wheel 9, (see especially Fig. 6,) or be withdrawn therefrom. As the wheel 9 is loose on the shaft, when the pin *k* is withdrawn from engagement therewith it revolves loosely on the shaft, and said shaft, the wheels 10 and 11, and consequently the feed-rolls O′ O² are permitted to remain motionless, thus stopping the feed without shutting the gates, stopping the mill, or throwing of the belts. The sliding rod L is for the purpose of moving the sliding collar K back and forth as it is desired to disengage or engage the wheel 9. It is provided with a forked head, *l*, which engages with a groove in said collar K, (see especially Figs. 6, 7, and 11,) and is thus enabled to operate said collar in the desired manner. The other end of this rod is also extended into a head the internal surface of which is beveled or wedge-shaped, and is thus adapted to be operated upon by the cam M, as will be presently described. Said rod is drawn back by said cam and forced forward by the coiled spring *l′* (see Fig. 11,) which surrounds it. Said rod, including both heads, is preferably constructed in two parts, as shown, which are connected together by the machine-screw *l²*. As is shown most plainly in Fig. 11, these heads limit the movement of the rod, one in one direction and the other in the other, and thus insure accuracy in the operation of the sliding collar and pin forming a clutch. The cam M is pivoted by a bolt, *m*, to the upper portion of the frame A. It has a beveled or wedge-shaped point, *m′*, which is adapted to pass behind the corresponding portion of the head of the sliding rod L, (see Figs. 6, 9, 10, and 11,) until it strikes the stop *a* on the frame A, and thus through said rod to withdraw the clutch K *k* from engagement with the wheel 9, and thus permit the latter to revolve loosely on the shaft and the latter to stop. This cam device is operated either by its handle *m²* by hand or through the latch-like portion *m3* by the projections *j* on the bar J2. As will be discovered on an examination of the drawings, (especially Fig. 7,) when the handle I is moved and the levers and bars thus operated the projections *j* will, during the movement of the bar *j*2, engage with the latch *m*3, and, during its further movement, force the cam over far enough to force its point *m′* down behind the head of the rod L, and thus operate the clutch, as before described. During the return

Fig. 1

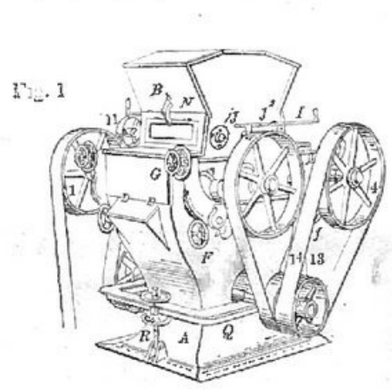


Fig. 2

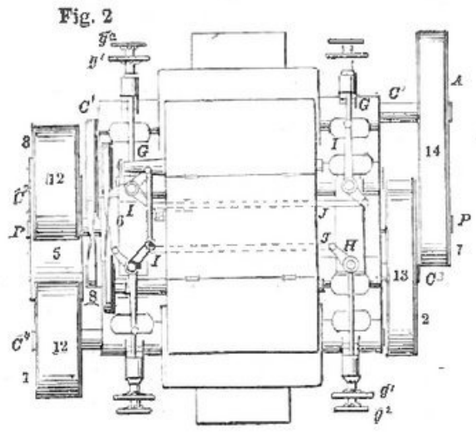


Fig. 3

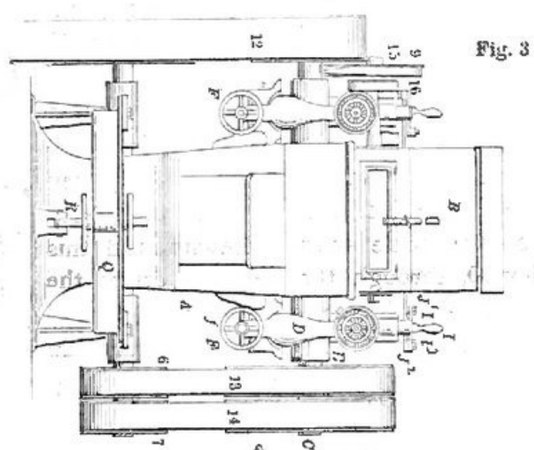


Fig. 4

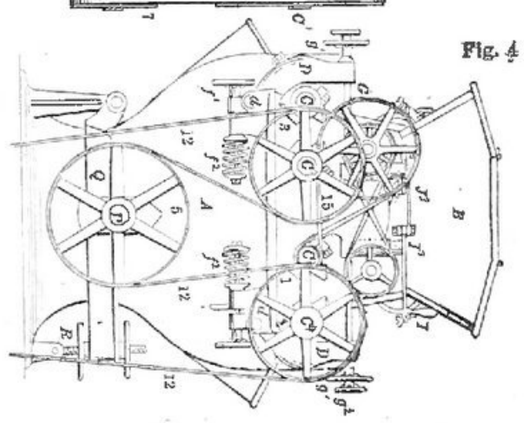


Fig. 5

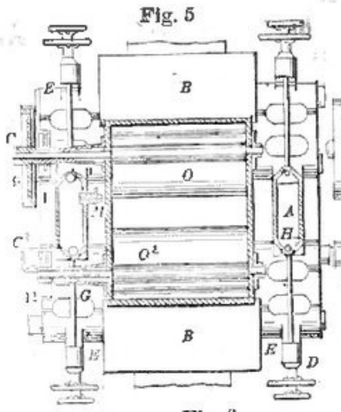


Fig. 15

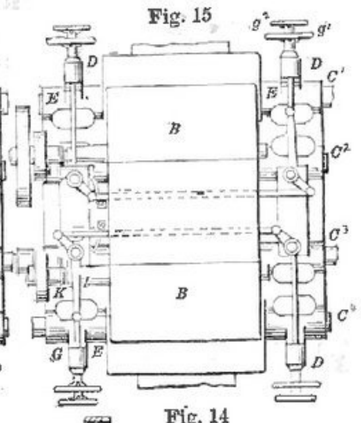


Fig. 6

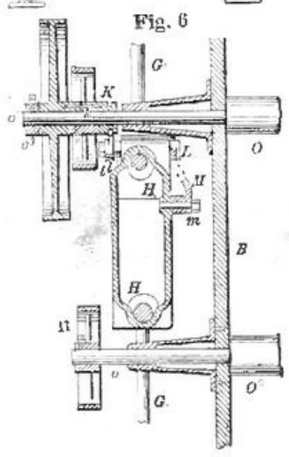


Fig. 14

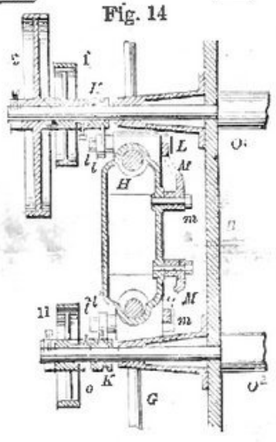


Fig. 9

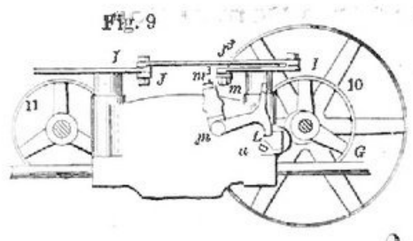


Fig. 10

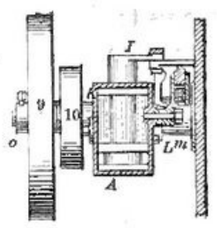


Fig. 8

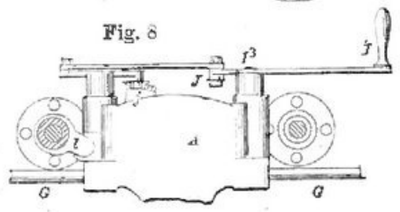


Fig. 11

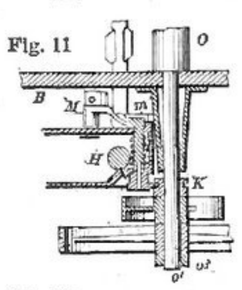


Fig. 7

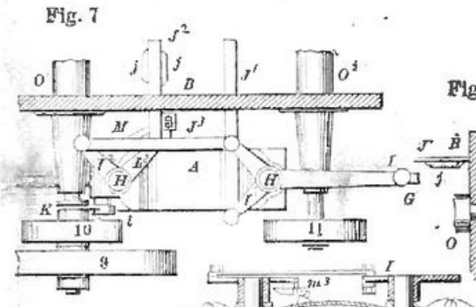


Fig. 12

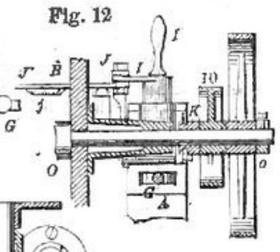
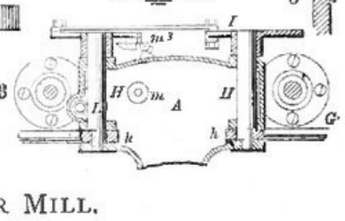


Fig. 13



PATENT NO. 305,320. ROLLER MILL.

travel of the bar J2 the operation just described is reversed, and the spring *l'* forces the clutch back into engagement. To allow of the necessary end-wise movement of the latch *m*3 to permit it to engage with the lugs *j*, should it be out of exact position, it is spring-mounted in a barrel, as shown in Fig. 10. By means of the mechanism just described the feed is stopped simultaneously with the parting of the feed-rolls, without changing the position of any portion of the feeding mechanism. There is a considerable movement of the mechanism which parts the grinding-rolls before there is any engagement between it and the mechanism which stops the feed-rolls, and therefore the feed is stopped as the final result of the operation, while it is started as the first result of the reverse operation. This keeps the rolls always supplied with material while in grinding relation, which is a most important result. When it is desired to stop the feed without parting the grinding-rolls, it can be easily done by moving the cam device by means of its handle *m*2. The feed-gates N bear only the same relation to the other devices herein shown that any other suitable feed-gates would, Being no part of this invention, they will not be herein described. The feed-rolls O' O2 in themselves are the ordinary feed-rolls, and are mounted on shafts *o'* *o*2. The shaft *o'* bears the pulleys 9 and 10, the pulley 9 being loose thereon, as previously described, and being held in place by the pulley 10 and the collar *o*3. The shaft *o*2 bears the pulley 11, which, in the construction herein most fully illustrated, is fast thereto, as usual.

In the construction illustrated in Figs. 14 and 15, wherein the mill is converted into two single mills, the devices are constructed so that either feed-roll may be stopped at will independently of the other, instead of both at once. The pulleys 9 and 10 are both loose on the shaft *o'*, but are connected with each other so as to revolve together. A collar *o*4, bears the same relation to the clutch mechanism as the hub of the pulley 10 does in the double mill, the clutch and clutch-operating devices being the same, as well as the collar *o*3. As will be seen, the effect of releasing the clutch on these wheels is to allow the shaft *o'* and roll O' to remain idle, while the rotation of the shaft *o*2 and the roll O2 is uninterrupted. On the shaft *o*2 the pulley 11 and collar *o*5 are in the same relation to the clutch mechanism that the pulley 9 and the hub of the pulley 10 are in the double mill previously described. Thus, it will be seen, by simply duplicating the clutch mechanism, adding a small collar to each shaft, and dispensing with the bar J3, the double mill is converted into two single mills, each of which can be separately operated. The counter-shaft P, its yoke Q, and the adjusting-screw R form no part of this present invention, and will not therefore be described in this application. The several pulleys and belts operate as follows: The main belt 12 drives the pulleys 1, 3 and 5, and thus the rolls C' and C3 in one direction and the counter-shaft M in the other direction. The counter-shaft, through the pulleys 6 and 7 and belts 13 and 14, running therefrom to the pulleys 2 and 4, drives the rolls C2 and C4 in the opposite direction to that in which the rolls C' and C3 are driven. The roll C3 has on its shaft the small pulley 8, which, through the belt 15, drives the pulley 9, one of the feed-rolls O', and the pulley 10 on the same shaft therewith, and this pulley 10, through the belt 16, drives the pulley 11 and the feed-roll, O2.

PENNSYLVANIA MILLERS' ASSOCIATION.

SEVENTH ANNUAL MEETING.

PHILADELPHIA, OCTOBER 7 AND 8.

PROGRAMME.

OCTOBER 7TH.—Dinner at Plummer's Hotel, 1 p. m. Convention opens at 2 p. m., Assembly Hall, corner Tenth and Chestnut Sreets General business meeting, and opportunity for visiting millers to join the Association. Evening Session, 7.30.—Lecture by J. D. Nolan. Subject, "Milling of To-day."

WEDNESDAY, A. M., OCTOBER 8TH.—Visit new roller mills of S. Hartranft & Co., Ninth Street, below Girard Avenue, by special invitation of Griscom & Co and McFeely. 11 A. M.—Visit Commercial Exchange. 1 P. M.—Dinnner at Plummer's Hotel. During the afternoon and evening, visit objects of interest and Electrical Exhibition.

All Millers cordially invited to attend this Convention.

A GOOD TIME IS EXPECTED.

SCIENTIFIC AND MECHANICAL

FLOW OF WATER THROUGH TURBINES.

WE extract the following from a paper on this subject by Arthur Rigg, Esq., president of the Society of Engineers, London, read before the British Association at Montreal, Lord Rayleigh in the chair, which opened on Wednesday, August 27th.

After remarking that a strict adherence to the older accepted rules of design never produces thoroughly efficient turbines, and that in the best of such motors these rules are disobeyed, the writer pointed out how little reliable practical information can be obtained from all the voluminous literature relating to turbines. He also stated that the course of a stream flowing through the guides and buckets of a turbine had no appreciable influence upon the velocity obtained so long as one essential condition was observed, namely, that its velocity should be gradually reduced to the least that will carry it clear of the buckets.

In comparing screw propellers and turbines, both were shown to possess similarities, and experiments made by the writer, and published in the transactions of the Society of Engineers for 1868, were referred to as explanatory of his view of the case. It was further pointed out that there is no such thing as absolute motion, for all velocities are relative to something else; and thus in a turbine we need only concern ourselves with such diminution in velocity as occurs in relation to the earth, and not necessarily with velocities in relation to the moving buckets of a turbine.

Impact was considered as pressure due to the construction of velocity in a direction perpendicular to a plane surface, while reaction from a vertical stream is the natural integration of the horizontal elements of the successive pressures, which act vertically in regard to the concave surface upon which the stream is caused to flow.

In most theoretical investigations, it is assumed that impact and reaction are equal when a current is diverted at right angles to its original course. This condition, however, implies that a maximum result should be obtained from screw propellers when their blades stand at 45 deg. to the plane of rotation. But in practice an angle of 42 degs. is found best; and this is so, because impact and reaction under the conditions stated are not equal, but bear to each other the proportions of 71 to 62, and these proportions give an inclination of screw blade of 41 degs., taking an experiment which corresponds most closely with the conditions of a screw propeller.

The resultant due to those proportions is found to be 94.25 units, whereas if impact had been the same as reaction, it would have been 100.75 units; and this is the total amount that can be aimed for in designing a screw propeller or pure impact turbine, where the stream is merely turned through a right angle from its original course. But if instead of turning the current only 90 degs, it is turned through 180 degs., then impact, and a still further reduced reaction, both act vertically downwards, and it is their sum, and not merely their resultant, that constitutes the total pressure obtainable from a jet of water. Taking the standard unit employed in the experiments described, this sum is found to be 126, of which 71 represents impact and the remaining 55 the effect of complete reaction.

Therefore in designing a turbine or screw propeller it would seem desirable to aim at changing the direction of a stream so far as possible into one at 180 degs. to its original course; for it may be said that carrying out this view has placed the modern scientifically designed turbine in that pre-eminent position it now holds among all hydraulic motors.

HEAT AND POWER.

In the course of his opening address, president Rayleigh, of the British Association said: "In thermo-dynamics the first law which asserts that heat and mechanical work can be transformed one into the other, at a fixed rate, is well understood. The second law is now receiving the attention it merits. It is that the real value of heat, as a source of mechanical power, depends upon the temperature of the body in which it resides —the hotter the body in relation to its surroundings, the more available is the heat. In order to see the relations which obtain between the first and second law of thermo-dynamics, it is only necessary for us to glance at the theory of the steam engine. Not many years ago calculations were plentiful demonstrating the inefficiency of the steam engine, on the basis of a comparison of the work actually got out of the engine with the mechanical equivalent of heat supplied to the boiler. Such calculations took into account only the first law of thermo-dynamics, which deals with the equivalents of heat and work, and have very little bearing upon the practical question of efficiency, which requires us to have regard also to the second law. According to that law, the fraction of the total energy which can be converted into work depends upon the relative temperatures of the boiler and condenser and it is therefore manifest that, as the temperature of the boiler cannot be raised indefinitely, it is impossible to utilize all the energy, which, according to the first law, is resident in the coal. On a sounder view of the matter, the efficiency of the steam engine is found to be so high that there is no great margin remaining for improvement. The higher initial temperature possible in the gas engine opens out much wider possibilities, and many good judges look forware to a time when the steam engine will have to give way to its younger rival."

* * In order to ascertain the degree of advantage obtainable by felting and lagging steam boilers, Mr. B. H. Thwaite, F.C.S., has carefully carried out the following experiments on a Bull type of vertical boiler: A definite quantity of water was poured into a vessel of a size sufficient to cover one square foot of plate surface, the vessel being externally lined with wood. The rise in degrees of heat during the hour's exposure was noted. The same weight of water, with identical initial temperature, was then placed for the same time on the surface of the lagging, which consisted of three thicknesses of three-eighths inch felt, covered with one-half inch tongued and grooved battens. On the naked plate it was found that 516.75 heat units per square foot were absorbed by the water; and on the lagged portion only 145.75 units per square foot were given off. This is equivalent to a reduction of wasteful radiation, due to the lagging, of 34 per cent; or with a vertical boiler, say 4 feet in diameter and 9 feet in height, working for ten hours, there would be saving, due to the lagging, of at least 70 pounds of coal.

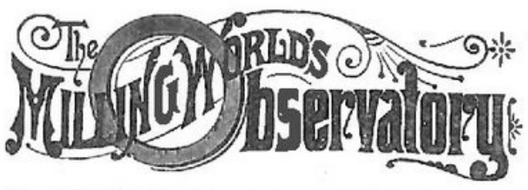
* * It seems to be overlooked by meteorologists, says a writer in the *Journal of Science*, that when a season has taken a decided character, whether as wet or dry, the ordinary indications of change seem to lose their meaning. In 1879 all signs of fair weather, drawn from the appearance of the clouds, the actions of birds and insects, etc., were quite misleading. And in the present season I have more than once seen the commonly accepted signs of rain go for nothing. The sky may become gradually overcast with dark ragged masses of underscud; there may be a "hollow and a blustering wind," swallows may fly low, slugs come out in numbers, bubbles of gas rise from ditches, etc., but the weather remains dry, or at the most there is a slight shower.

* * A durable and weighty-looking door is now made of paper. While it cost about the same as wood, it is much better because there is no shrinking, swelling, cracking or warping. It is composed of two thick paper boards, stamped and moulded into panels and glued together with glue and potash, and then rolled through heavy rollers. It is first covered with a waterproof coating and then with a fire-proof coating, and is painted and varnished and hung in the ordinary way.

* * A correspondent of the Rocky Mountain *News*, after a close examination of the tin mines in the Black Hills, expresses belief that within five years to come the vast amount of tin annually imported into the United States will be replaced by a larger amount of it mined and worked into tin from ore found in the Black Hills of Dakota.

* * The Panama Canal Company has signed a contract with the New York Dredging Company for the cutting of the last section of the canal. The contract provides that the work shall be finished in 1887.

* * Steam that does not carry more than three per cent. of water is considered "dry steam."



Notes from the Mills.

Albert Wehausen, of Two Rivers, Wis., has bought four double machines, all complete, from E. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

Boyd & Allison, of Waynesville, N. C., are building a two run mill, using a full outfit of machinery manufactured by Nordyke & Marmon Co., of Indianapolis, Ind.

Three double machines from E. P. Allis & Co.'s Reliance Works, of Milwaukee, have been added to the mill of Sidle, Fletcher, Holmes & Co., at Minneapolis, Minn.

A steam grain elevator is being erected at Kewanna by Nordyke & Marmon Co., of Indianapolis, Ind., for A. L. Toner, which will store 50,000 bushels of wheat and load or unload 4,000 bushels per hour.

Farmers in the vicinity of Alden, Minn., have banded together for the purpose of handling their own wheat. They have hired an agent to attend to their business who will receive his pay from the Association.

The Milwaukee road has stationed a wheat buyer at Shakopee, Minn., and will erect a wheat storehouse. Over 250,000 bushels of wheat are tributary to that market and the proceeding is expected to regulate the price.

The capacity of the mill of J. J. Manker & Co., at Red Oak, Iowa, has been augmented by the addition of four double machines, besides other machinery from E. P. Allis & Co.'s Reliance Works at Milwaukee.

The mill of Straus Bros., at Oakfield, Wis., is changed into a roller mill. The contract to supply four double roller mills, reels, purifiers, iron works, etc., etc., necessary for the change was given to Ewd. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

A complete outfit for the remodeling of the mill of J. W. Picker, Cambridge, Neb., into a roller mill has been shipped from the Reliance Works of E. P. Allis & Co. at Milwaukee; a No. 2 four-break reduction machine, two double roller mills, etc., etc., will form a part of the machinery of the improved mill.

J. C. Harris, of Montgomery, Ind., Z. T. Kester, of Pimenton, Ind., Mountman & Ewald, of Delpha, Ind., H. F. Neikirk & Son, of Keedysville, Md., B. Gilbert, of Glasca, Kan., Martin & Johnson, of Vandalia, Ill., Bank, Appleman & Co., of Roann, Ind., and C. Anderson, Ohio, Ill., are all having their mills remodeled to the roller system by Nordyke & Marmon Co., of Indianapolis, Ind. Each job costs about $5,000 and an average of six breaks on wheat is used.

Bull's warehouse at Houston, Minn., burned Sept. 21, with 3,000 bushels of grain and some farm machinery; also one general store owned by M. J. McCann; five saloons, owned respectively by E. Gallagher, A. Olson, A. Burk, Thomas Rowland and K. I. Grasly; one grocery and restaurant run by Mrs. McClaflin. All the buildings were partially covered by insurance, except Gallagher's; loss, $6,000.

Roller milling is certainly asserting its superiority over the old system. Walbert & Mentzer, of Columbus, Kan., in appreciation of this fact have lately concluded to keep up with the spirit of the age and have ordered four double machines and all the other machinery necessary for the transformation of their mill into a roller mill from Ewd. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

William Stevens, a teamster of Ulster county, met with a horrible death while hauling millstones. He had a very heavy stone on his truck and was seated on it driving. The stone not being properly fastened, when he came to a steep place in the road, it moved and fell over upon him, killing him instantly. We understand Stevens was in the employ of Mr. J. Jay Bell, the millstone manufacturer of No. 32 South William Street, New York, whose quarries and factory are in the above place.

The Northern Pacific Elevator Co. has ordered its agents to allow farmers special bins, and also allow them to ship, whenever they may wish, grading to be done at terminal points. Last year there was so much dissatisfaction because of grain grading in the elevators below the qualities supposed to exist in the wheat that the company has determined this season to permit farmers to ship to themselves at Duluth and take the grades at public inspection, which is very gratifying to the grain raisers.

Among a number of flouring mills now being erected in Virginia and West Virginia appears a list of six being furnished and set up by Nordyke & Marmon Co., of Indianapolis, Ind., as follows: The Luray Mill Co., a 50-barrel roller mill; N. D. Rogers, Buchanan, Va., a 40-barrel roller mill; Freeland & Tucker, Glover's Gap, W. Va., a three run new process water mill; Bonsachs & Kiser, Bonsachs, Va., remodeling to the roller system; Ford & Davidson, Brown's Mills, W. Va., remodeling to the roller system; and P. L. Terry & Co., Roanoke, Va., remodeling to the roll system.

The Meriden mill at Meriden, Minn., nine miles from Owatonna, was destroyed by fire on Sept. 21. The mill was built about six years since by a co-operation of the citizens of Meridan and the farmers of the western part of Steele county and of Waseca county. It has been idle since last spring. The original cost of the mill was about $23,000, and a good many thousand have been added since in the way of improved machinery. Last year the cyclone damaged the mill, and the cost of repairing and new machinery to the amount of $4,000 put in created a floating debt which was extinguished by a sheriff's sale of machinery. The amount of insurance could not be learned.

The elevator capacity of Manitoba and the North-West has shown considerble extension during the past season. On the C. P. R. south-western Manitou has one elevator having a capacity of 40,000 bushels, Morden, 40,000, Gretna, 40,000, Morris, 40,000. On the Emerson division, Nivenville, 25,000, Winnipeg city, 150,000 and 40,000. On the C. P. R., west, Portage La Prairie, 115,000 and 40,000, Chater, 30,000, Brandon, three elevators, of 40,000 each, Griswold 30,000, Virden, 30,000, Moosomin, 30,000, Indian Head, 50,000. While arrangements are being made to add elevators of about 40,000 each at Morden, Gretna, Manitou and Emery, also at points, on the Manitoba & North-West Railway.

The farmers of Minnesota and Dakota do not take kindly to current market prices for wheat. And no wonder, for when they have paid for harvesting and threshing, and elevator and transportation charges, the share which remains to them of the price paid at Minneapolis, St. Paul and Duluth is pretty small. But there is some comfort in the reflection that, after all, they are immensely better off than the Kansas farmers. The price paid at Minneapolis or St. Paul for No. 1 hard is 78 cents. At Kansas city the price for the highest grade of wheat at that point is 58 cents, which means about 40 cents to the farmer in Western Kansas. Our North-western farmers get at least 50 per cent. more for their wheat than those of Kansas.

The farmers in the vicinity of Huron, Dak., are greatly disaffected over their treatment by the railroads and middlemen. The dissatisfaction having steadily grown the last eighteen months, culminated by a meeting in that place of nearly 150 to take steps to ameliorate their affairs. Mr. Ohr was chairman and A. C. Ceen secretary. It was voted to organize the Beadle County Farmers' Protective Association, with capital of $60,000. Of this $5,000 is to be paid up, shares $10 each, only sold to farmers; no man to have over two and one-half shares. N. E. Read, A. C. Keen and N. W. Thompson were appointed to draft articles of incorporation and by-laws and make their report at a meeting next Saturday afternoon. The intention is to build elevators and buy farmers' supplies.

The Lexington (Ky.) *Transcript* says of the new mill there: The Lexington Roller Mills, juts completed, turned on steam Sept. 25 at noon and commenced the manufacture of flour. The mill plant cost $65,000, and is the best that can be had in the world. The firm has put in every modern appliance for first-class flour, regardless of expense. The capacity will be two hundred barrels per day, which can be doubled if necessary. The head miller is Mr. W. W. Patterson, of Neenah, Wisconsin, miller of the first roller mill ever built in the United States, and who has no superior in his line. The mill was planned by Mr. John Jamison, of the same place, who built the first roller mill in which Mr. Patterson was miller. The building is 100x40 feet and six stories high. In addition there is a ware-room 120x40 feet, and four stories. This is a long needed and most important enterprise for Lexington.

The following orders have been received from prominent mill furnishers, by E. P. Allis & Co.: Willford & Northway, Minneapolis, Minn., a Gray's noiseless belt roller mill, for J. N. English, Henatile, Mo.; Richards & Butler, Indianapolis, Ind., eight pairs of Allis rolls in Gray's not sellers belt frames, for J. Naphis, Mt. Jackson, Va.; The Great Western Mfg. Co., Leavenworth, Kan., seven pairs Allis rolls in Gray's noiseless belt frames for Miss. Miller, Bowman & Co., Baker, Kan. And six pair Allis rolls in Gray's noiseless belt frames for another job they have under construction; The Geo. T. Smith Middlings Purifier Co., of Stratford, Canada, six pairs Allis rolls in Gray's noiseless belt frames, for T. H. Wyman, Ont.; The Richmond City Mill Works, Richmond, Ind., Eight pairs Allis rolls in Gray's noiseless belt frames for G. W. Bowen, Independence, Kas. And six pairs Allls rolls in Gray's noiseless belt frames for Lukins & North, Atchison, Kan.; The Capital Iron Works, Topeka., A Gray's noiseless belt roller mill for Henry Leighler, Valley Falls, Kan.; The Cockle Separator Co., Milwaukee, six pairs Allis rolls in Gray's noiseless belt frames for one of their customers.

The Canadian Pacific Railroad Company, we observe, are backing up the efforts of the Montreal merchants to retain what they can of the Western grain trade. Recently they have secured the necessary facilities for the erection of a number of elevators, with storage capacity of 400,000 bushels each, and each capable of handling 10,000 bushels per hour. The cost will be about $400,000; and it is proposed that they shall be public elevators, open for the use of any railway that is reached by the Canadian Pacific on the high level, and by the Grand Trunk on the low or wharf level. The Vice-President and General Manager of the Canadian Pacific, in notifying the Montreal Harbor Commissioners of the undertaking, directs their attention to the new country with vast grain-producing possibilities which has been made tributary to Montreal by means of that route, and dwells upon the necessity of "providing proper shipping facilities for the tens of millions of bushels of grain which will come from Ontario and the Northwest seeking shipment at this port." The Montreal steamship people, apparently, are expecting great things as a result of this new departure, and the agent of the Beaver line is quoted as saying, "the ships of the lines which he represented could be loaded by this means without moving them. There would be a great saving of time, even for the ships to which the grain had to be brought in lighters, for a barge loses a day in going to the canal, being locked in and locked out, and waiting its turn, while from these elevators it could be loaded in a few hours. From the beginning of March grain would begin to pour into these elevators, and they would certainly be full by the opening of navigation, and cargoes would be ready for the early ships." We do not know that there is anything in this new departure to warrant the apprehension that any considerable trade is to be diverted from the Erie Canal, but it might be just as well to reconsider this question of reducing the cost of handling grain at Buffalo and at this port. The best way to meet competition is to make competition impossible.

It is not often that Neenah is visited with so destructive conflagrations as those of Sept. 25, we are told by the Neenah *Gazette*. On the morning of that day, at 2 o'clock, fire broke out in the extensive flouring mills of J. L. Clement & Sons, and by 4 a. m. the entire structure was gutted, and that portion of the mill being of brick, the walls fallen. The stone walls of the east mill stand, but are practically useless. How the fire originated is a mystery, but certainly it first broke forth from the basement, and soon the flames working upward enveloped the entire structure. It was hot work for the firemen, and many times it seemed as though adjoining mills must go, but owing to the splendid working condition of the fire department, the loss was confined to this mill, if we except, the partial destruction of a couple of cars, a box belonging to the Central, and a tool car belonging to the Northwestern. The steamer and No. 1 never worked to a better advantage, and with aid received from Menasha, kept the fire under control. The Falcon mills of J. L. Clement & Sons, were among the best equipped in the state, and in them was first introduced a successful working of the new roller system, and among the machinery was 24 set of rolls. Their loss could not have fallen short of $50,000 or $60,000. The insurance on mill is $25,000, and on stock $6,000 placed principally in the Millers' Mutual Insurance Company of Wisconsin, of which J. L. Clement was president. Of the stock destroyed was 450 barrels of flour, and over 3,000 bushels of wheat. It is doubtful if the mill will be rebuilt, and a number of employes both from the mill and the cooper shop of Mr. Webb, are thrown out of employment. At eleven o clock same day, an alarm of fire came from the Island, and the elevator of Rounds & Coats was found to be on fire. The fire started on the roof, from sparks from passing locomotives, or from the elevator smoke-stack, and within an hour the dry wooden structure was reduced to ashes. The buildings adjoining were prevented from burning through the excellent work of the steamer. The loss on the elevator building is something like $5,000, on which an insurance of $2,000 was held. In stock was some 800 bushels of oats, fully covered by insurance. The elevator was built some thirteen years ago by H. Hewitt, Sr., and six years ago the present proprietors bought it.

The coming Minnesota Legislature will probably enact a law in relation to wheat grades and elevator storage, says the *Pioneer Press*. The matter is of vital importance to sellers and buyers, those who raise wheat and those who sell it. It is necessary that a just and working compromise of desires and complaints should be attained. What the farmers want has been pretty thoroughly stated by them in their various meetings and conventions in all parts of Minnesota and Dakota and through the press. What the men who buy wheat here in Minnesota, next door to the fields, and then take the responsibility of shipping and selling in the next market, would say is of importance. A few weeks ago a plan for state inspection was published at length. Several grain buyers and elevator men and others whose attention has been called to the matter, have given their views upon it. The plan proposed is substantially as follows: There should be a board of commissioners to sit ten days in each month from September to March, to provide and enforce regulations for inspecting wheat, through inspectors for every one hundred miles of railroad; the elevators to be required to have weighing and cleaning apparatus, and clean a farmer's grain if complaint is made about grading; elevators also should be compelled to grade and receipt for all wheat offered for storage, and guarantee the grade making elevator receipts negotiable. A number of millers and grain men, when approached on the subject, evinced very little interest in the matter. Many of them said they didn't care whether there was a state inspector or not. The state might pass a law fixing grades, but they could not fix the price of wheat by law. Said one of the big millers; "The man who got up this grading scheme evidently thinks he has solved the whole problem of grades and prices. But bless me he don't know what he is talking about. If this plan was made a law the farmers would curse the man who made it a law in less than a year. It would be a good thing for the millers though."

The Baltimore Corn and Flour Exchange is much excited over the secret cutting in eastbound rates and discriminations in favor of Philadelphia as against Baltimore. By some it is thought that Mr. Robert Garrett and the Baltimore & Ohio Company have not been protecting Baltimore as they should. Shipments of wheat from Chicago to Philadelphia were made at three cents difference against Baltimore. The Transportation Committee of the Exchange is investigating the matter. Mr. Charles E. Ways, Assistant General Freight Agent of the Baltimore & Ohio, said his company had no intelligence from railroad sources that rates were being cut in the West, although there may have been cases which had their origin in misunderstandings among freight agents. He was confident that the pool will be maintained, because it is too important to all the trunk lines for either of them to break from it, and in his opinion there was no foundation for the statement that the pooling agreement is disregarded by several of the companies. For that reason he did not believe that any considerable rate-cutting has been going on, for any line which would carry freights at a cut rate would have to account for it at the full figures in the pool. If New York was getting packed provisions carried from Chicago at 25 cents, the roads which carry them must pay 30 cents into the pool. In the absence of any official instructions his company would not make a lower rate than that which had been authorized by the Pool Commissioner. A prominent provision house, which was notified by its Chicago correspondent that a cut rate of five-cents was given in that city as against Baltimore, secured a cut from the Pennsylvania Railroad in Chicago. The quoted rate was 25 cents to New York, 23 to Philadelphia, and 27 to Baltimore, while the regular rate was: New York 30, Philadelphia 29, and Baltimore 27. When these facts were made known to the Pennsylvania agents they gave Baltimore a five-cent cut, making the rate to this city 22 cents. The Chicago correspondent of the same house telegraphed that "Rates are being cut 10 cents under regular figures, Baltimore being included." This made the rate 17 cents. Notwithstanding the statements of Mr. Way that the Baltimore & Ohio Company had no official knowledge of the cutting of rates, the provision trade were satisfied they have abundant proof of the fact. There was considerable comment upon the non-action of the Baltimore & Ohio, while the Pennsylvania came promptly to the support of this city by giving a rate which recognized the three cents differential allowed by the trunk line agreement.

From Foreign Lands

AMERICAN EXPORTS.

THERE was a time when the millers of the United States were confident that the bread-eaters of this country could scarcely exist without large exports of American flour, and this harping so often on the string of an "early, heavy, and continuous" decline of the export of the article may be said to be at least suspicious, says *The Miller*. There is one thing certain, that such a decline as has commenced would not have been deemed possible a few years ago, and when the tide begins to recede there is no saying when the recession may cease, if the conditions remain the same as when the ebb began. We are told by one contemporary that whenever English mills reach the same stage of perfection in milling processes as has been attained by those of America, they will, it is admitted, begin to compete with the United States establishments. English mills, at all events a great many of them, have, it may fairly be said, reached that stage now, and it may be assumed that the competitive contest has begun. If the perfection in process has had anything to do with the decline of American flour that has been reaching our shores for some time past, is there any reason why this influence in checking such an export of this material should not continue, more especially as our English mills are more likely to improve in the perfection of process than to recede?

Our English millers have the same or better machinery for the manufacture of flour as their American rivals. They have the same methods of manufacture; they are not inferior to the United States millers in practical intelligence; while as regards their knowledge with regard to the scientific principles of the trade, they are at least on a level with the millers of America. The average operative miller of the United Kingdom is, at the very least, equal to the same class in the United States. They have associations in several parts of the kingdom, where they discuss subjects of importance to the trade with an intelligence and temper which does them the highest credit, and thus we are armed at all points to take our part in helping to realize the prediction to which we referred at the commencement of this article. We are told that it has been demonstrated plainly that with a little more care in cultivation, the yield of American wheat can be increased to an extent far beyond the increased cost of tillage, and that it must also be borne in mind that prices have been high for years, and that a lower range is probable, which will give the American millers additional advantage over those of Great Britain. We de not see the relevancy of this mode of reasoning. If prices of wheat are to range low, it may be assumed that the British miller will reap as great an advantage as his American rival, more especially as the former draws his wheat from all parts of the world, and has markets in London and other ports which regulate the prices of raw material. At all events the British millers are disposed to take their chance, under the reasonable certainty that the average market price of wheat will enable them to make flour which will hold its place in their own markets, irrespective of any competition, come from whatever quarter it may.

NOTES.

Lightning destroyed the mill near Nashwitz, Germany, on Sept. 3.

The cultivation of wheat in Cuba has proved a success, and large numbers of flouring mills are building.

The large Praus' mill near Asten, Germany, burned September 1. The loss in buildings and grain was heavy; the fire is supposed to be of incendiary origin.

Advices from India report crop prospects improving. There has been a favorable rainfall in Bengal, but drought still continues at Madras. In Myeou there have been serious floods.

Canada imported 324,000 barrels of flour from the United States last year, and 3,000,000 bushels of wheat. The tariff on flour is fifty cents per barrel, and on wheat fifteen cents per bushel.

Sir J. B. Lawes, the eminent agriculturist, says: "It is somewhat remarkable that, within my recollection, every year ending in 4 has produced a great wheat crop—1834 was one of the largest crops ever grown in this country: '44, '54, '64, '74, were all great crops; the present crop, upon my experimental field appears likely to give a larger yield than any crop since 1864."

Step by step the leading food products of Europe are being reproduced in this country. Macaroni is made by Italians in New York, Neufchatel cheese by Swiss in New Jersey, Schweizer kase by Germans in Ohio, Albert biscuit by Englishmen in Albany, and caviare by Russians in Harlem. Nearly all of these are exported to Europe, and there sold as domestic manufactures.

The new roller mills at Antwerp, erected by Messrs. Seck Bros for the *Compagnie Francaise de Moulies a Vapeur* are now entirely lighted by electric light. One hundred and fifty incandescent lamps are distributed over the building, whilst two large arc-lamps are placed on the quay and in the mill yard. The mills, started a few weeks ago, have been running day and night, with a capacity of about 25 sacks per hour. Mr. H. Collin, a well-known miller and corn merchant of Antwerp is the director of the company.

A series of experiments have recently been carried out to test the value of compressed air as a grain conveyer and elevator at the Boundary street station of the Warehouse Owners' Company, Liverpool. The application is the invention of Mr. P. Evans, of that city, and consists in propelling the grain through tubes by compressed air at an estimated cost of 6d. per ton from Liverpool to Manchester. Further trials will be made, and should they turn out successful a company will be formed to lay a pipe line from Liverpool to Manchester.

The German Patent Office has rejected the motion of Mr. Felix van den Wyngaert to invalidate Mr. F. Wegmann's original German patent for his porcelain roller mill. The plaintiff averred that defendant had not fulfilled the conditions as to manufacture, under which the patent was granted, but the defendant proved that his roller mill had been manufactured in large numbers by various German firms to whom he had given a license. The authorities decided in Mr. Wegman's favor, and ordered Mr. Wyngaert to pay the costs.

Roller milling in the colonies has made more progress than has been anticipated; evidently the objection to treating soft wheat by rolls is being rapidly overcome. Amongst the systems there at work, Mr. Luther informs us that he has the following number of small and large plants, Ganz's rolls, now at work, viz., 7 in Victoria, 8 in South Australia, 2 in New South Wales 2 in Queensland, and 3 in Tasmania. He has also just contracted for another large plant, of a capacity of 12 to 14 sacks per hour, for which 49 machines of the value of £4,000 are being sent over.

The Arlberg tunnel, giving railway communication between the Austrian Tyrol and Switzerland, was formally opened with great ceremony on the 20th inst. The Emperor Francis Joseph, accompanied by the members of his ministry and many members of the Austrian Parliament, traversed the tunnel in a decorated special train. There were crowds of people at all the stations between Innsbruck and Bregenz, and numerous addresses and hearty ovations were tendered the Emperor. Many foreigners were present, who united in pronouncing the tunnel a complete triumph of engineering skill.

Some rather striking details as to the areas of crops are to be gleaned from the Irish statistics. Thus the wheat acreage has decreased from 154,794 in 1881 to 69,008 in 1884; barley from 218,016 in 1880 to 166,997 in 1884; oats from 1,397,307 in 1882 to 1,347,395 in 1884; beans and peas, from 11,914 in 1881 to 8,728 in 1884, and potatoes from 855,293 in 1881 to 798,942 in 1884. Turnips have kept fully up to average area of the last four years, while mangels and beets have decreased from 44,338 acres in 1881, to 34,515 in 1884, possibly owing to the drought. Cabbages appear to be growing in favor, as there are 39,485 acres under the crop this year as compared with 36,840 in 1882—the largest area for any of the three years previous to 1884. The cultivation of flax has been declining since 1880, when there were 157,540 acres under the crop, as compared with only 88,197 this year. The land taken out of tillage in Ireland has been absorbed by permanent pasture.

H. Kains Jackson, probably the most popular authority in England, in a letter recently published in Dornbusch's List, asserts that English farmers will immediately reduce their wheat crop 1,000,000 acres, and French farmers 5,000,000 acres. This means a reduction of 35 per cent. We had not supposed that even the present unparallelled conditions of the wheat trade were likely to produce a result as radical as this experienced observer anticipates, but we concede that his opportunities for forming accurate conclusions in respect to Europe are superior to those of any Ameriran statistician. It is a fact, however, of superior interest to American farmers, that if the general production of Europe be reduced only 25 per cent., there will be a new demand on the next harvest for 300,000,000 bushels added to the normal, or an aggregate deficit in Europe of 500,000,000 bushels. This is more than double the average requirements of Europe, and more than 200,000,000 bushels in excess of the European requirements of any former year. Jackson proclaims to European farmers that "it is time to stop" and give up the fight. It is in this interesting juncture, when the largest foreign demand ever promised should prompt the American farmer to increase his acreage to the uttermost, that the *Tribune* advises him to retire from the field of competition. Nothing could be more short-sighted.

The most novel system of milling in France we are told is what is known as the Devilliers' system, which is a bolting millstone system, with porcelain rolls for the reduction of the middlings. The novel part about this system is that the fixed stone is formed of sections of porcelain, representing the portions of an ordinary burr stone. The furrows in this are replaced by perforated metal, forming a sort of sieve which bolts the product immediately it is reduced. The eye of the stone is 0.15m. (nearly six inches) and the diameter of the stone is nearly five feet. Each section of porcelain is formed of three pieces or wedges. The bottom of this fixed stone forms a receptacle divided into three compartments for receiving the reduced product; the first compartment, very narrow, receives the black or dirty flour, which is extracted before contact with the remainder; the second and very large compartment receives the main flour product and the middlings, and the third compartment, which is narrow, receives the flour from the bran detached in the ordinary grinding. These three products are led to separate receptacles. The running stone is an ordinary French stone of the La Ferte sous Jouarre description. This system, which was amongst the competitors in the recent French trials, did not come out very well, but it was tried under adverse circumstances, such as want of sufficient power, etc. This is not the first time probably that porcelain millstones have been tried, but so far they have not passed the experimental stage.

THE Grain and Flour Trade

Office of THE MILLING WORLD.
Buffalo, N. Y., Oct. 1, 1884.

There has been an increase of 125,530 bushels in the stock of wheat in store in Chicago. The stock is now 3,679,302 bushels, against 3,553,862 bushels last week. The visible supply of wheat, as reported by the Chicago Board of Trade, shows an increase of 2,288,365 bushels. The supply is now 23,945,135 bushels, against 21,656,770 bushels last week.

Early in the day, says the *Commercial Bulletin* of this morning, there was less energy to business in breadstuffs, and a tendency in the direction of a lower level of prices, under the pressure of large and increasing receipts at the interior, with indications that the farmers will ship still more liberally as soon as they get through with marketing corn for the corner premiums now ruling at Chicago. Another element of weakness was the fact that the seven Atlantic ports showed a moderating outward movement of wheat, while at the interior the tendency of the movement was to increase.

The Chicago visible supply statement made apparent an increase of 2,288,000 bushels wheat, 1,244,000 bushels corn and 374,000 bushels oats, and gives the totals as follows: Wheat, 23,945,135 bushels; corn, 6,620,756 bushels; oats, 3,171,969 bushels: rye, 739,654 bushels, and barley, 435,311 bushels. The public cable advices indicated an advance of 1d in wheat at Liverpool, and this had confirmation by the later private dispatches, which, however, failed to do more than endorse the early accounts, and thus fell below expectations and became a factor of weakness. To sum up disappointing "cables," liberal interior movement, decreasing outward movement, increased visible supply, scarcity and high cost of ocean tonnage, outside speculative buying orders falling off, exporters out of working gear with seaboard prices, a disposition to unload long contracts, the bears plucking up courage and selling more freely. The bearish conditions have been enumerated. Their effect was seen in the decline of ¼@⅜c.

The afternoon, on the other hand, developed a better feeling, based on the cast iron fact of low prices to admonish the "bears" to be cautious and to give courage and confidence to the "bulls." The early loss was quickly recovered; there was some sharp buying by the "longs." Prices at the best indicated an advance of ⅜@½c over yesterday's figures. Finally the market showed an advance of ⅜@½c with the tone of the market steady. The demand for cash wheat has been moderate, making the most of the combined inquiry of exporters and local millers; prices showed a decline of ¼@½c at the start of business, with a complete recovery subsequently on the afternoon reaction in contracts. A fair business in ungraded red wheat, c. i. f., at from 88@89¼c.

The flour market heads towards fairly steady prices, although the easier ruling of wheat in the fore part of the day, with the comparatively full receipts of both flour and grain, gave something of a *quietus* to the buying for stocking up purposes: the trade are once more disposed to take their chances for getting flour as they want it at present or easier prices, while last week there was a disposition to go beyond present wants, in anticipation of some advance. This was because the wheat market was so strong. With wheat easing off, flour buyers hold off; there is, however, a very fair business with both exporters and the local trade buyers, and no change is apparent in prices. Rye flour is quiet and steady, with the selling range $3 50@3 80 and occasional lots at $3 90 for fancy. Buckwheat flour is quiet and weak at about $2 30@2 50 for actual business, with $2 60 an outside figure. Corn goods are dull and nominally without change. Mill feed is in moderate demand; moderate supply; no change in prices: market quiet and steady.

BUFFALO WHEAT MARKET.

Buffalo, Sept. 30, 1884.

Market for all kinds of grain dull. Millers are looking for old wheat but none here. No. 1 Northern Pacific Hard firm at 88½, No. 2 85, No. 1 white 84½. Milling white 82, No. 2 white 80c, No. 2 red 83 @ 83½, No. 1 long berry 88 @ 88½, No. 2 85. Corn, very little offering No. 2 held firm at 61½, No. 3 54c, lower grades 50 @ 52. Oats quit No. 2 white on track 32½ @ 33 No. 2 Mixed 31 @ 31½. Some Western Barley offering but no sales reported. Canada offering at 65 for No. 2 bright but our maltsters are not anxious to start in at present.

JAMES S. MCGOWAN & SON.

FOREIGN EXCHANGE.

The market for sterling was moderately active, the pressure of bankers' bills tending to soften rates, which closed only fairly steady. Posted rates closed at 4.83 for sixty days' and 4.85 for demand. The actual rates ranged: At sixty days' sight, 4.82@4.82¼; demand, 4.84@4.84¼; cables, 4.84½@4.84¾, and commercial, 4.80½@4.80¾. Continental exchange steady and quiet; francs, 5.22½@5.21⅞ and 5.20@5.19⅜; reichsmarks, 94½ @94⅝ and 95@95⅛; guilders, 39¾ and 40. The closing posted rates were as follows:

	60 days.	30 days.
London	4 83	4 85
Paris francs	5 20⅝	5 18⅛
Geneva	5 20	5 17½
Berlin, reichsmarks	94¾	95⅜
Amsterdam, guilders	40⅛	40⅜

BUFFALO MARKETS.

FLOUR—City ground clear Northern Pacific spring $4.75@5.25; straight NorthernPacific spring, $5.25@5.75; amber, $5.25@5.35; white winter, $5.00@5.50; new process, $6.25@6.75; Graham flour, $4.25@5.25. Western straight Minnesota bakers, $5.00@5.25; clear do, $4.75 @5.25; white winter, $5.00@5.25; new process, $6.25@ 6.75; low grade flour, $2.50@4.00. OATMEAL—Ingersol $5.75; Bannerman's $6.00; Akron $6.25. CORNMEAL—Market steady, with a fair demand. Coarse, $1.15; fine, $1.25 per cwt. RYE FLOUR—In fair demand $4.00@4.25. BUCKWHEAT FLOUR—Demand fair at $3.50 per cwt. WHEAT—No. 1 hard Northern Pacific held firmly at 88c, easb; offered at 88½c Oct., 90c. asked Nov., 92c asked 90½c. bid Dec., 88c. asked year. Winter wheat steady to firm; sales of a number of small lots and car-loads at 90c for longberry red, 88c for No. 2 do, and 83½c for No. 1 white. CORN—Quiet. Sale six car-loads No. 3 at 53½c. OATS—Dull. Sale one car-load No. 2 mixed at 30c, and one do No. 2 white at 32c. BARLEY—Six-rowed State nominal at 68c. RYE—No. 2 Western 60c; State 55c.

THE LESSON OF THE TIMES.

There is nothing so morally wholesome as looking disagreeable facts square in the face. Furthermore, they are not always so unpleasant, on acquaintance, as we had expected to find them. The sooner people fully take in the fact that economy, whether fashionable or not, is bound to be the watchward of the coming season, the better it will be for themselves and for the domestic and social circles of which they are part, says the *Farmer's Tribune*. Not that we are to have a dread period of panics and bankruptcies, and a long stoppage of those venerable symbols, the "wheels of industry." All signs must fail if there is upon us a period of crushing depression or of long-enduring stagnation. But signs must also fail if the approaching winter, and possibly its successor, be not dull and considerable discouraging in most lines of business. Profits will be smaller, competition in trade will be keener than it has been before, and those who get the business will transact it on narrow margins. With most people, certainly, all this means an inevitable curtailment of expenditure. There is nothing quite so contagious as expensive living. When times are flush and money is plenty the scale of expenditure stealthily and imperceptibly amplifies itself. Each new acquisition creates two new wants, the satisfaction of which leads the way to several more. Our plain and sensible ancestors talked much about "necessaries," "comforts" and "luxuries." We have grown a long way beyond their classification. Our list things which we deem necessary would at once scoop over all their modest categories of things necessary, things comfortable and things luxurious. And when we have passed the limit of those appointments and appurtenances which we regard as desirable for our comfort, and enter the domain of modern luxury, we have transcended the utmost bounds of the ancestral imagination. The multiplication of the specific and tangible commodities which make up the sum total of material wealth, and which stimulate the wants they gratify, is the chief characteristic of our time. And artificiality in living has kept even pace with the opportunities and temptations which the times have afforded.

A season of financial and industrial reaction is intended as a moral tonic and ought so to be consciously used. It is meant to teach men and women to live more simply and normally, to deny themselves a good many things they are just as well off without, to enjoy simple pleasures, to make the most of home life and its hospitalities with less of display and ostentation. The retrenchments in expenditure which most establishments will find necessary, will be in the domain of luxuries. They ought to be made good-naturedly; and the people who are least positively obliged to make them, ought to encourage their neighbors by setting the fashion. Such economies do not impair the standing of any family in any social circle in which a place is worth having. They frequently have a salutary effect on the physical as well as the moral health of a family or a society. Nine tenths of the anxiety which business men feel in shaky or stagnant times arises from a false pride and an unwillingness to reduce the expenditures of an overgrown domestic establishment to a modest scale. Mere wealth and show have such high consideration in these degenerate times, that a good many people regard rascality as less disgraceful than economical living. So much the worse for the times, and so much greater the moral need of a period which will compel retrenchment.

THE BIG CORN DEAL.

The Chicago *Tribune* asks: "Who is running the corn deal?" and then goes on to say: "Even those who think they know that do not profess to be able to tell when it will end. The idea that it is nearly over was, however, dispelled from the minds of the few who watched the long conference yesterday between an inspection gentleman and the party who calls margins. In the absence of knowledge to the contrary, one may hazard the guess that they would like to find out how the new corn is going to grade. It would make an important difference if new corn should be ruled out, as it was in some former years; for the new corn is already arriving. A carload came in here yesterday from Southeastern Kansas and inspected high mixed. The fact of its newness was disputed, but there is no doubt about it. The corn was shelled Sept. 18 at Udell, Kan., and the sender of it telegraphs Schwartz-Dupee that his shellers are busy, and he has forwarded three cars more already. Probably not much of that corn will arrive this month, but plenty of it in October, if prices only keep up sufficiently high to present an inducement to work night and day."

SHORTAGE ON GRAIN CARGOES.

Many complaints are made by vessel owners, concerning the method of weighing grain at the Detroit elevators. The Chicago *Tribune*, with reference to the subject, says: "Nearly every cargo shipped from that port to Buffalo falls short from 20 to 100 bushels, and the vessel is compelled to settle for the difference in weight. Cargoes shipped from Chicago are seldom deficient in weight, which would indicate that the shortage is not due to any negligence on the part of the Buffalo elevators. The only trouble experienced by Chicago vessels in regard to shortage is on cargoes of flax seed. In former years scarcely a cargo of flax seed went out of Chicago that did not fall short of Buffalo, but vessel owners made an organized effort to eradicate the evil and in a measure succeeded. Their trouble, however, seems to have broken out afresh. A dispatch received here states that the schooner 'C P. Minch' was short 150 bushels upon discharging her cargo of flax seed at Buffalo. The vessel was asked to pay the consignee of the cargo about $200, which would more than eat up the profits of her trip."

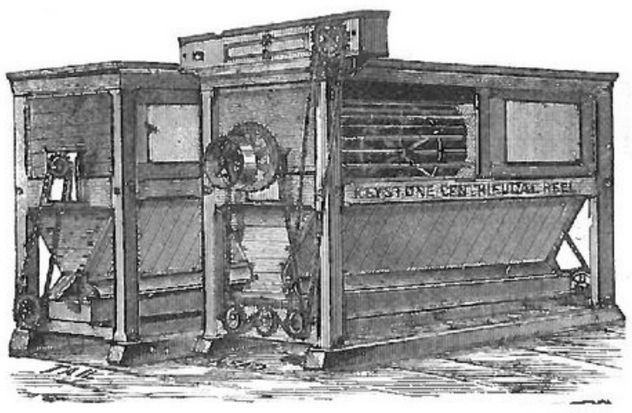
CANADIAN "EXPERIMENTAL FARM" WHEAT.

The wheat crop of the experimental farms of the Canadian Pacific Railway, it would appear, has been disposed of at 87 cents a bushel. "This figure," says the Montreal *Gazette*, "is somewhat higher than the ruling quotation in the Northwest, which runs in the neighborhood of 70 cents a bushel, but even this latter figure is materially higher than the prevailing prices in the Western States. At Kansas City, the capital of Mr. Blake's paradise, the price for the highest grade of wheat is only 58 cents, and in Minnesota and Dakota millers have established such low quotations that farmers will not market their crops. The higher range of values in the Canadian Northwest is principally due to the low transportation charges by the Canadian Pacific Company."

E. P. Allis & Co., of the Reliance Works, at Milwaukee, have sold one of their double machines to Messrs. H. F. Neikirk & Son, Keedyville, Md.

Bahl & Bros., of Fredonia, Kan., and Voss & Son, of Peru, Kansas, are each commencing the erection of fifty barrel roller mills, using steam as the motive power, and have placed their contracts with Nordyke & Marmon Co., of Indianapolis, Ind., for the entire machinery.

Another mill in Nebraska is undergoing transformation into a roller mill. Standard, Underhill & Co., of Utica, Neb., have ordered a complete line of rolls and other machinery necessary for such a change in their mill, from E. P. Allis & Co., of the Reliance Works at Milwaukee.



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Drag Brush Feed, Tightest Heads, Best Results. Cheapest and Best on the Market. Adapted to all Kinds of Milling. The New Drag Feed Thoroughly Protects the Silk. Sent on Trial to any Responsible Miller.

ROLLER MILLS, SCALPING REELS, PULLEYS, SHAFTING AND ALL KINDS OF MILL IRONS.

Full Stock of Dufour and Dutch Anchor Bolting Cloth.

BEST QUALITY FRENCH BURR MILLSTONES, FOR MIDDLINGS, WHEAT AND FEED.

Leather, Rubber and Cotton Belting, Smut Machines, Purifiers and everything belonging to a Flour Mill furnished at Lowest Market Prices. For Circulars, Prices and Full Particulars, address the Manufacturer,

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UNION STONE CO., BOSTON, MASS.

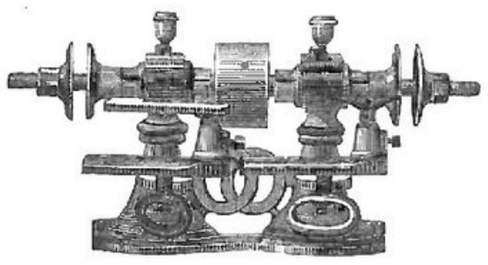
PATENT MILLSTONE CEMENT.

Invaluable to Millers for Repairing and Filling the Joints,

This is a new article of manufacture, and is greatly superior to the preparations now in common use by millers. It is much cheaper, and can be applied by an inexperienced person. It is perfectly harmless, containing nothing of a poisonous nature. It has the nature and attains the hardness of French Burr Stone, wears evenly with it, and not only fills the cavity, but adheres to and becomes a part of the Stone, and assists in grinding. Good Millstones are now in use, composed entirely of this preparation. The Leading Makers are Adopting it to Build Their Millstones. For miller's use, it is put up in cases of two sizes. ***Price per case: Small, $3,00; Large, $5.00.*** We cannot open an account for so small a sum, therefore ***Cash should be sent with order,*** otherwise we shall send C. O D. by Express, collecting for return of the money. For manufacturers, we furnish in bbls. of 300 lbs. Price upon application. Emery Rub Stones, for hand use in Finishing the Furrows and Faces of Millstones.

TRADE MARK.

Cavities and Seams in French Burr and other Millstones.



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Union Emery Wheels, Emery Wheel Machinery and Tools a Specialty. Wooden Polishing Wheels, Automatic Knife Grinding Machines. Grinders' and Polishers' Supplies. Catalogue on Application.

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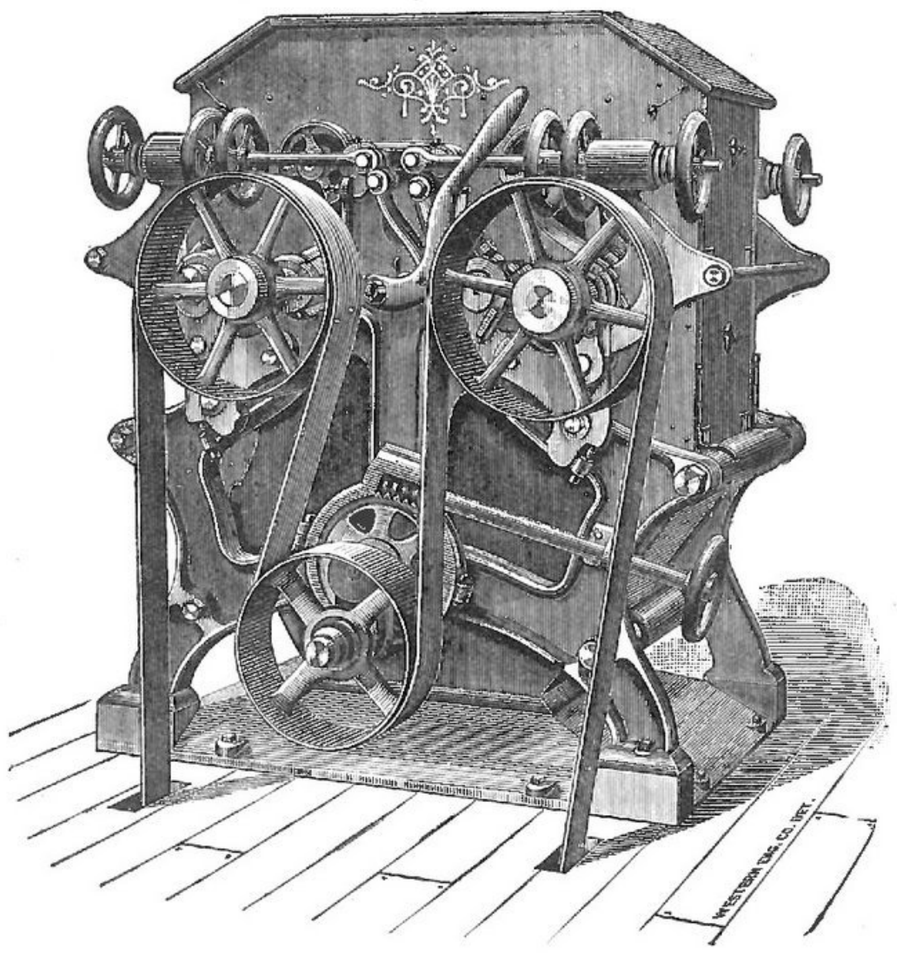

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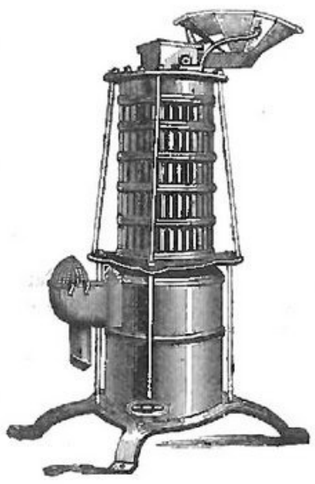

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The Lord Baltimore Hominy Mill is no experiment, but is in constant use and giving unexampled results in several large mills. Its capacity is greater than that of any other hominy machine, being from three to five barrels of Hominy per hour, and in preparing the corn for Grits, Pearl Mill or Corn Flour, five to six barrels per hour. It is built of the best materials. The various cages are composed of an aggregation of staves, so that in case any of the staves are broken, they may be easily repaired with little trouble or cost.

For Prices, and further particulars, address

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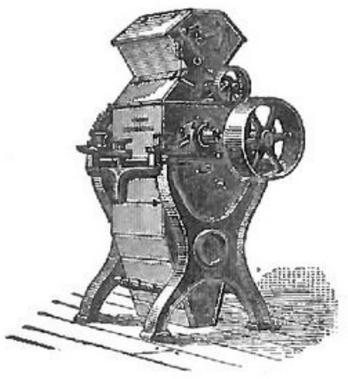
GREAT TRIUMPH IN INVENTION

The Simplicity so long sought after in Roller Mills attained at last.



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Reduction Rolls, Bolting Cloth, Purifiers, Middlings Mills and Bolting Chests. General Mill Furnishing Supplies.

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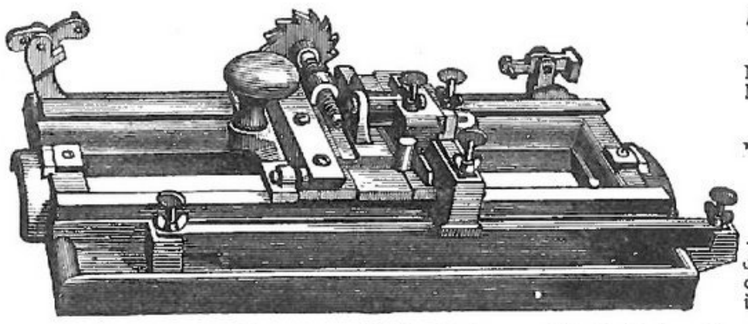

ADAPTED TO ALL KINDS OF DRESSING.

No 1, to face and crack	$25.00
No. 2, to face, crack, dress furrows, and will dress any size stone	45.00
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Will do as good work, and is more easily adjusted than any other machine. Sent on 30 days' trial. Address for circulars, containing full information.

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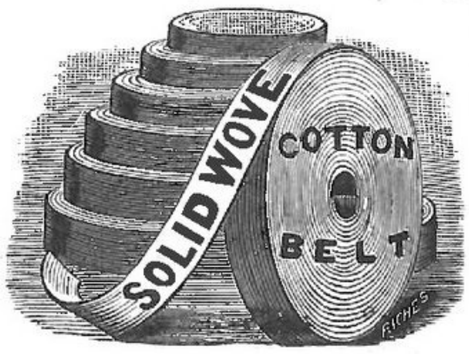

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And Re-corrugated to order. Porcelain rolls re-dressed. Our Machinery for this purpose is very accurate. Can do work promptly.

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All these qualities are made BEFORE the piece is woven and not by mechanical means afterwards.

Numberless attempts have been made to palm off inferior grades of cloth for DUFOUR, but up to the present time all such efforts have signally failed. We have handled this silk since its first introduction into this country, and in purchasing of us millers can rely upon getting.

THE GENUINE DUFOUR.

It is particularly noted for its superior qualities in the way of STRENGTH, ELASTICITY, UNIFORMITY IN MESH, REGULARITY OF THREADS, and freedom in bolting under all temperatures

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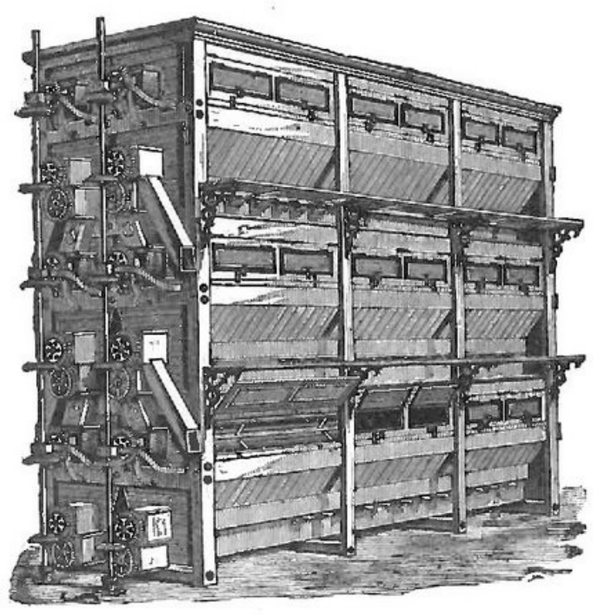

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